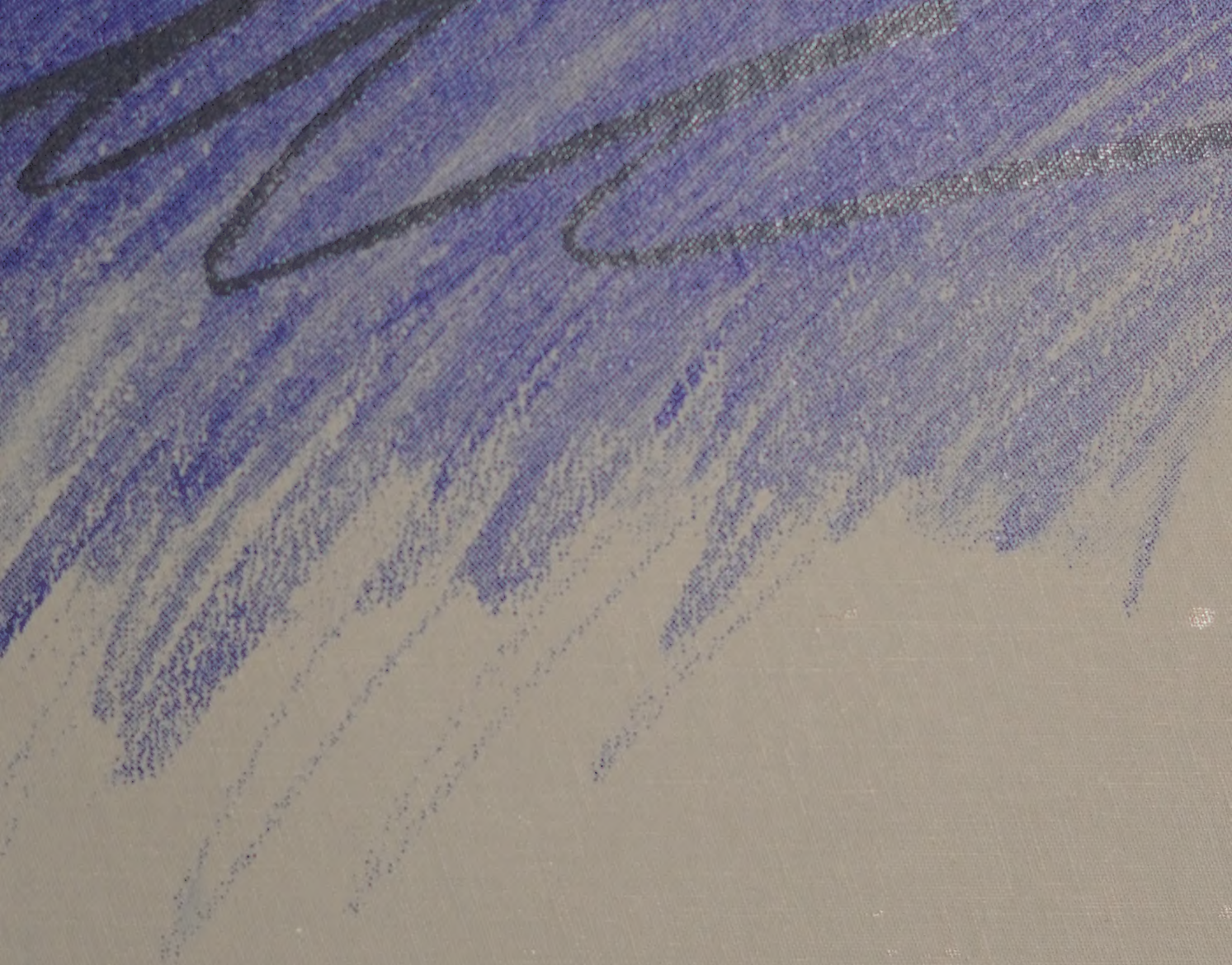

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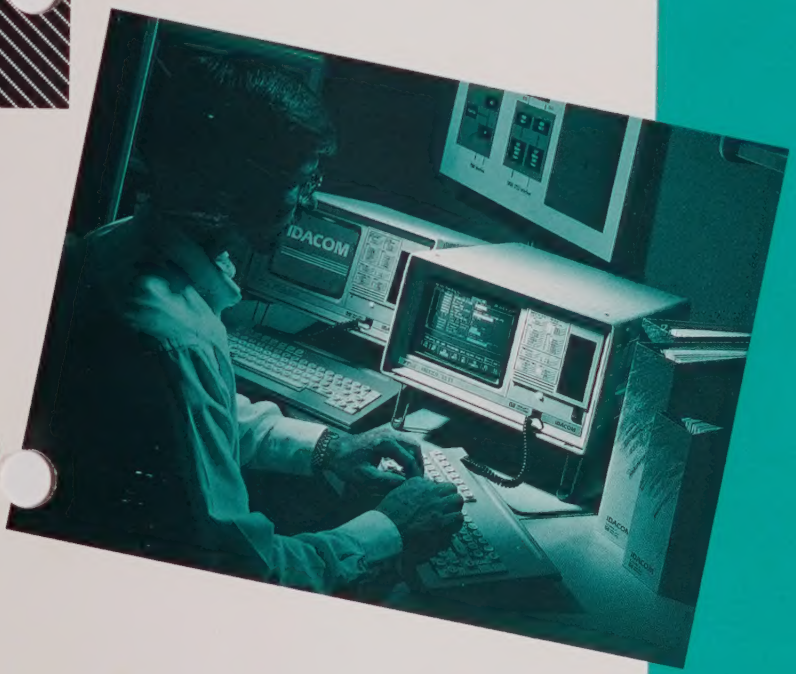

PT302/PT502
User Manual

Common Control

User Manual

Version 3.0
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Hewlett-Packard
IDACOM Telecommunications Operation

PREFACE

This manual is intended to provide a quick and easy-to-use instruction guide to install and operate Conformance Testing Common Control software. Refer to the PT300/500, the PT302/502, or the PT540 User Manuals for basic user information.

The procedure to load, set up, and execute test cases is similar for all executable test suites. Refer to the appropriate Executable Test Suite Manual for specific test suite information (PICS and PIXIT).

This manual is not intended to provide information concerning protocol specifications. Refer to the appropriate Abstract Test Suite for a description of the expected behavior for each test case.

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1. INTRODUCTION

IDACOM testers support conformance testing by providing executable test suites and common control software which allows the test operator to:

- execute a test campaign consisting of test groups or test cases;
- execute a test campaign consisting of the test cases which satisfy the PICS;
- display the protocol data exchanged while the test case executes;
- record the protocol data exchanged during a test case;
- print the protocol data exchanged during a test case;
- select the level of detail and organization of the test report;
- store the PICS, PIXIT, and test results on a disk;
- display the verdict assigned for every test case;
- rerun an individual test case;
- play back the data recording captured during the execution of a test case;
- assign a verdict to a test case manually; and
- provide operator comments for test case runs which can optionally be included within summary reports.

The common control software operates in the same way for all executable test suites.

NOTE
The ISDN NET3 layer 2 executable test suite is used as an example in this manual .

2. LOADING CONFORMANCE TESTING SOFTWARE

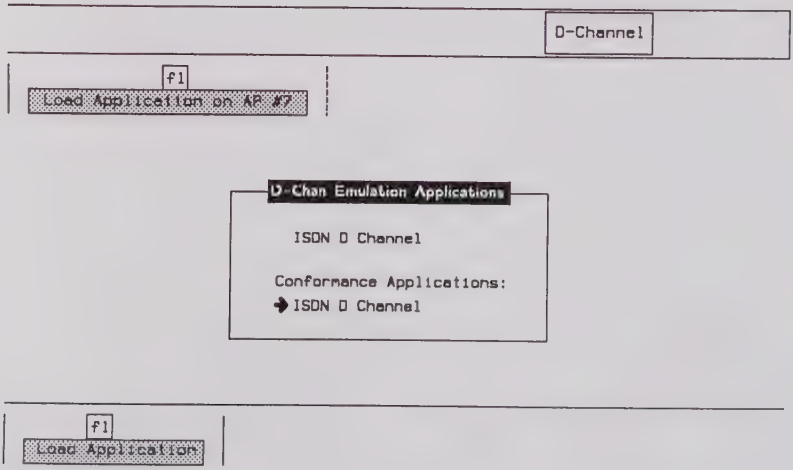
2.1 Loading Common Control Software

Loading the Common Control software is similar to loading emulation software as described in the specific emulation manuals. The example used in this section is for loading common control software on the ISDN PRA.

Before loading Common Control Software:

- ensure that the software is installed on the hard disk.
- ensure that the interface is configured properly as described in the PT300/500, PT302/PT502, or PT540 User Manuals.

Each test suite requires a specific configuration; refer to the specific Executable Test Suite Manual.



When the application has finished loading:

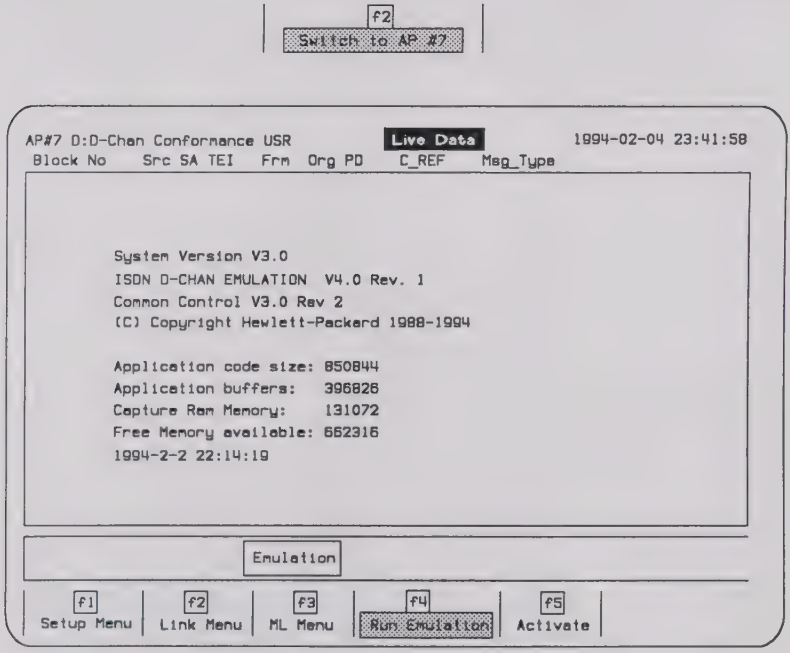
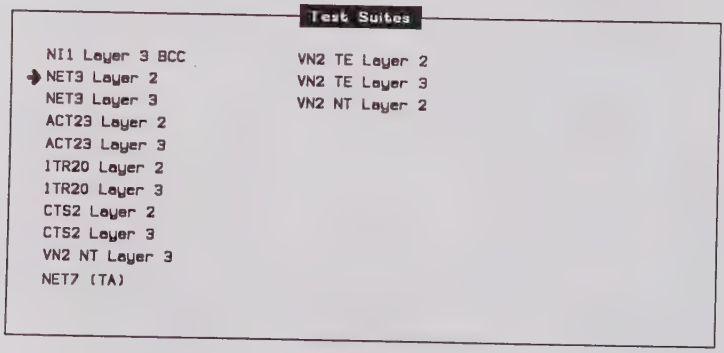


Figure 2-1 ISDN BRA D-Channel Emulation Program Display

2.2 Loading a Test Suite

If the executable test suite has not been installed on the hard disk, refer to the test suite Product Release Notice.



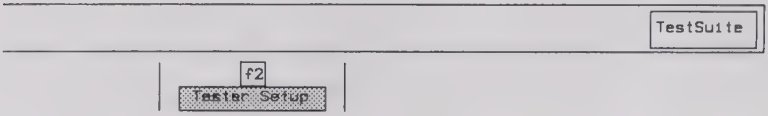
Wait for the following message.

```
The NET3 Layer 2 test suite has finished loading.
```

3. SETTING UP THE TEST SUITE

The tester must be configured before running tests, and the Protocol Implementation Conformance Statement (PICS) and Protocol Implementation Extra Information for Testing (PIXIT) must be specified.

3.1 Tester Setup



Tester Setup

→ Iterations	1	Interrupt Execution After:	
Delay Between Cases	3.0	PASS	NO
Test ID Frames	OFF	FAIL	NO
		INCONC	NO
Data Recording:			
Disk Drive	DRO	Printer:	
PASS	OFF	PASS	OFF
FAIL	ON	FAIL	OFF
INCONC	ON	INCONC	OFF

→ *Iterations*
Specifies the number of times the selected test cases execute. Valid values are 1 through 99.

→ *Delay Between Cases*
Specifies the delay, in seconds, after completing one test and before starting the next test. If no delay is required, set the value to 0.

NOTE
Any frames received during the delay are captured in the data recording for the previous test case run. These frames are shown as being received after the verdict assignment and have no effect on the test case run.

→ *Test ID Frames*
Specifies whether frames identifying the test group and case are transmitted at the start of each test case. The test identifier frames, along with the assigned verdict, are also transmitted at the end of each test case.

The test identifier frames are unique to each test suite and are described in the appropriate Executable Test Suite Manual.

NOTE
Because the test identifier frames contain an invalid address, they are discarded by an implementation.

The test identifier frames are useful for monitoring test suite execution when the tester is at a remote location. This situation is shown in Figure 3-1. The format of the test identifier frames is described in Appendix A.

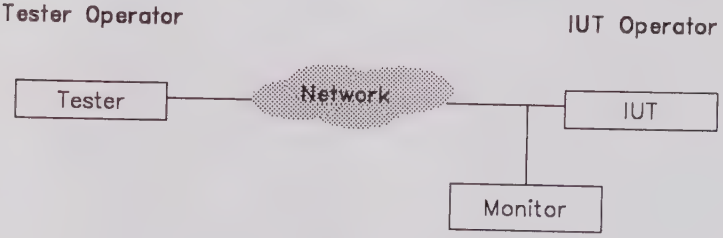


Figure 3-1 Using Test Identifier Frames

Data Recording:
Data recordings can be made selectively based upon verdict. For each iteration of a test case, a separate data file is created. Any existing data recording for the same iteration of the same test case with the same verdict is overwritten.

→ *Disk Drive*
Selects the floppy disk or hard disk partition to store recorded data.

→ *PASS*
→ *FAIL*
→ *INCONC*
Specifies whether the protocol data, exchanged during the test case, is recorded for test cases that are assigned the corresponding verdict.

Interrupt Execution After:
→ *PASS*
→ *FAIL*
→ *INCONC*
Selects whether to automatically interrupt test suite execution after the corresponding verdict is assigned.

If interrupted, the protocol data exchanged during the test case can be viewed. Execution can be resumed at the next test case, at the beginning of the test suite, or at the current test case.

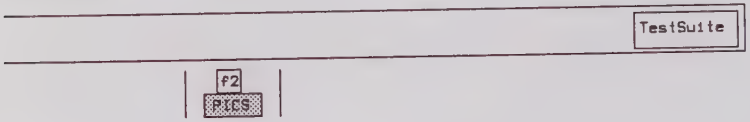
Printer:
A short or detailed progress report can be printed after each executed test case.

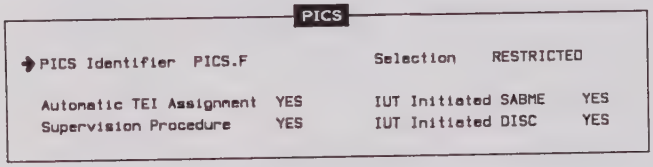
→ *PASS*
→ *FAIL*
→ *INCONC*

OFF	Test cases with this verdict are not printed.
SHORT	Prints the test group name, test case name, assigned verdict, and branch number.
DETAILED	Prints the information provided in the short format plus the protocol data exchanged during the test case in the current display format.

3.2 PICS Setup

The PICS menu indicates which optional protocol features are supported by the Implementation Under Test (IUT).





→ *PICS Identifier*
Save PICS in File Saves the PICS in the specified file.

Restore PICS from File Retrieves the PICS from the specified file.

→ *Selection*
RESTRICTED Only test cases that support protocol features specified on the PICS menu can be selected.

UNRESTRICTED Allows selection of any test cases.

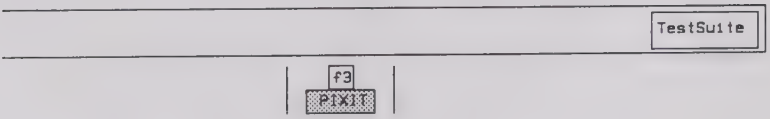
When *Selection* is set to *RESTRICTED*, only test cases which satisfy the PICS condition can be selected. If the PICS conditions are changed, dependent test cases will be deselected and the following message displayed.

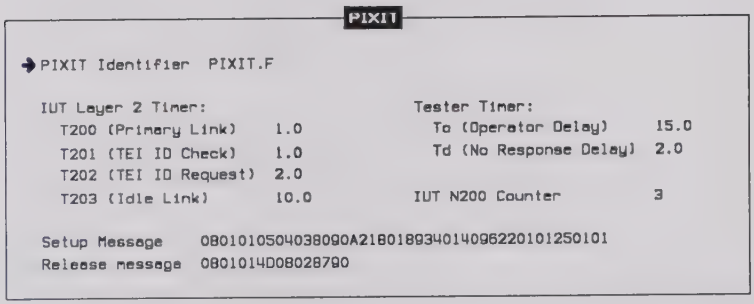
```
n test cases have been deselected due to PICS
restrictions.
```

NOTE
Refer to the appropriate Executable Test Suite Manual for specific PICS setup.

3.3 PIXIT Setup

The PIXIT menu contains IUT and additional tester parameters.





→ *PIXIT Identifier*

Save PIXIT in File Saves the PIXIT in the specified file.

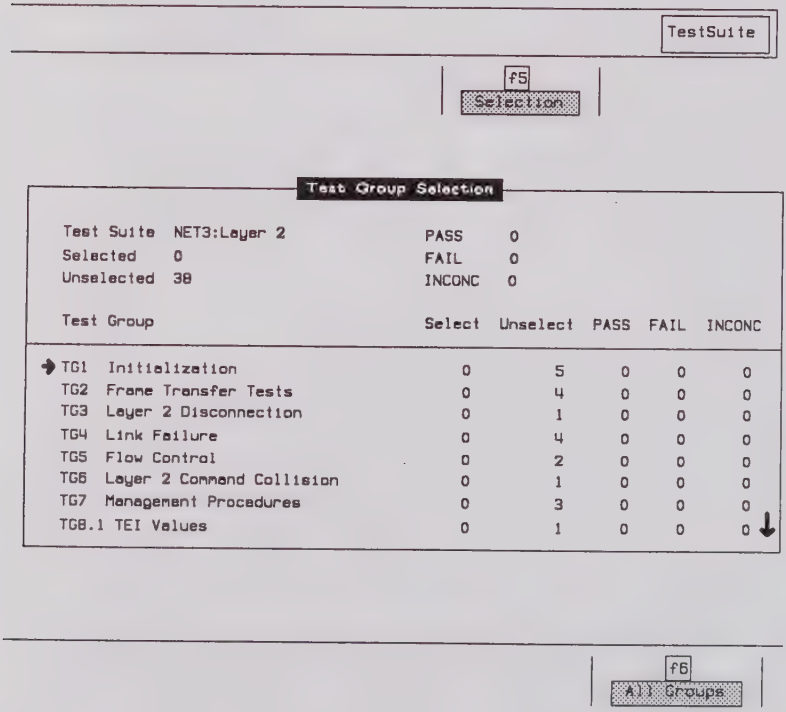
Restore PIXIT from File Retrieves the PIXIT from the specified file.

NOTE
Refer to the appropriate Executable Test Suite Manual for specific PIXIT setup.

4. SELECTING TEST CASES

The complete test suite, test groups, or individual test cases can be selected for execution.

Example 1:
Select the complete test suite.



NOTE
If Selection on the PICS menu is RESTRICTED, only test cases which satisfy the PICS conditions are selected; if UNRESTRICTED, all test cases are selected.

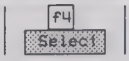
Page Up	Shows previous page of test groups.
Page Down	Shows next page of test groups.
Test Case Menu	Displays the Test Case Selection menu from which individual test cases can be selected.
Select	Selects all test cases within a test group.
Deselect	Unselects all test cases within a test group.
All Groups	Selects all test cases in all test groups.
No Groups	Unselects all test cases in all test groups.

NOTE

If there are more test groups than can be displayed on the screen, an arrow (↓) is displayed on the right side of the menu. To view additional test groups, use the Page Up and Page Down function keys.

Example 2:
Select all the test cases in the 'Initialization' test group.

→ *TG1 Initialization*



The test cases within a test group can be displayed prior to selection. All or individual test cases in the test group can then be selected.

Example 1:
Select all test cases in the 'Initialization' test group.

→ *TG1 Initialization*

f3
Test Case Menu

Test Case Selection

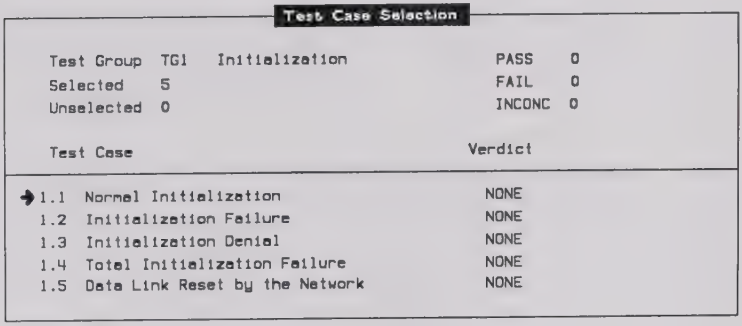
→ Test Group	TG1	Initialization	PASS	0
Selected	5		FAIL	0
Unselected	0		INCONC	0

Test Case	Verdict
1.1 Normal Initialization	NONE
1.2 Initialization Failure	NONE
1.3 Initialization Denial	NONE
1.4 Total Initialization Failure	NONE
1.5 Data Link Reset by the Network	NONE

f5
All Tests

Page Up	Shows previous page of test cases.
Page Down	Shows next page of test cases.
Next Group	Displays test cases from next test group.
Previous Group	Displays test cases from previous test group.
All Tests	Selects all test cases in the current test group.
No Tests	Unselects all test cases in the current test group.

Example 2:
Select only the 'Normal Initialization' test case in the 'Initialization' test group.



Page Up — Displays the previous page of test cases.

Page Down — Displays the next page of test cases.

Select — Selects an individual test case.

Deselect — Unselects an individual test case.

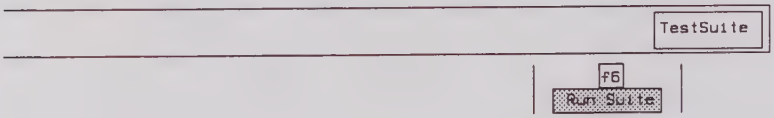
Run — Executes an individual test case (see Section 7.5).

Set Verdict — Changes the verdict assigned to a test case (see Section 7.6).

Playback — Plays back a data recording containing the protocol data exchanged during test case execution (see Section 7.2).

NOTE
If there are more test cases than can be displayed on the screen, an arrow (↓) is displayed on the right side of the menu. To view additional test cases, use the Page Up or Page Down function keys.

5. EXECUTING TEST CASES



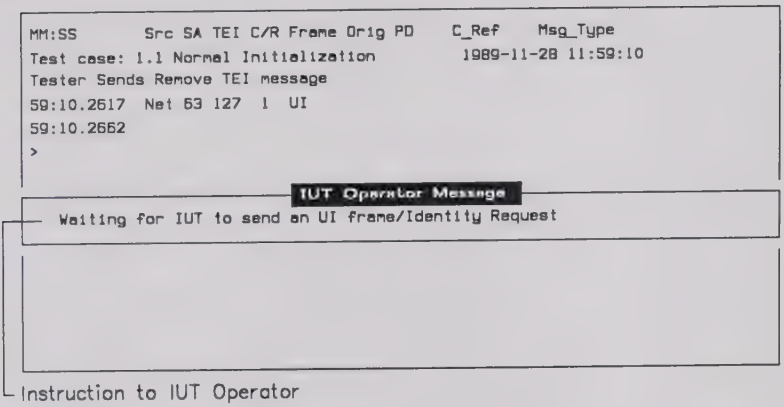
NOTE

Test case execution has commenced when the Run Suite function key is highlighted.

The protocol data exchanged during the test is decoded and displayed on the screen.

```
MM:SS        Src SA TEI C/R Frame Orig PD    C_Ref    Msg_Type
Test case: 1.1 Normal Initialization          1989-09-25 22:23:04
Tester Sends Remove TEI message
23:04.4240  Net 63 127  1  UI
23:04.4285
23:04.4465  Usr 63 127  0  UI
23:04.4505
23:04.7332  Net 63 127  1  UI
23:04.7377
23:04.7552  Net 0  64   1  UI     Org  Q.931 0        SETUP
23:04.7672
23:04.8759  Usr 0  64   0  SABME
>
```

If the test case is waiting for an action initiated by the IUT, an IUT Operator Message is displayed in the center of the screen.


MM:SS Src SA TEI C/R Frame Orig PD C_Ref Msg_Type
Test case: 1.1 Normal Initialization 1989-11-28 11:59:10
Tester Sends Remove TEI message
59:10.2617 Net 63 127 1 UI
59:10.2662
>
IUT Operator Message
Waiting for IUT to send an UI frame/Identity Request
Instruction to IUT Operator

The message is removed from the screen when:

- the expected action has been performed (for example, a UI frame/identity request is received);
- the IUT action timer has expired (see Section 3.3); or
- the test case is aborted by the test system operator (see Section 6.1).

When the test case is complete, the verdict is displayed on the screen.

```
MM:SS       Src SA TEI C/R Frame Orig PD     C_Ref    Msg_Type
23:04.7552  Net 0  64   1  UI    Org  Q.931  0        SETUP
23:04.7672
23:04.8759  Usr 0  64   0  SABME
23:04.8774
23:04.9101  Net 0  64   0  UA
23:04.9121
23:04.9779  Usr 0  64   0  INFO  Dst  Q.931 0         Alert
23:04.9834
23:05.0759  Net 0  64   0  RR
23:05.0784
Test case: Normal Initialization (MOD 128)  Verdict:  PASS(1)
>
```

Test Case Name — Assigned Verdict

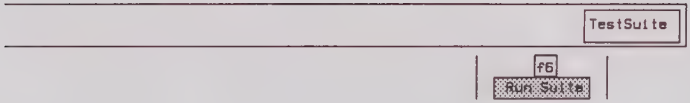
After the verdict has been assigned, execution will be interrupted if the assigned verdict has been selected on the Tester Setup menu.

The protocol data exchanged during the test case can be examined. The up and down cursor keys are used to scroll backwards and forwards through the captured data.

- Press the ↑ or ↓ cursor keys to scroll line by line.
- Hold down the **CTRL** key and press the ↑ or ↓ cursor keys to scroll page by page.
- Hold down the **CTRL** and **SHIFT** keys and press the ↑ or ↓ cursor keys to go to the beginning or end of the capture buffer, respectively.

6. CONTROLLING TEST EXECUTION

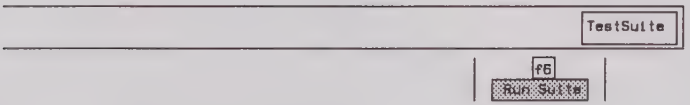
6.1 Aborting Test Execution



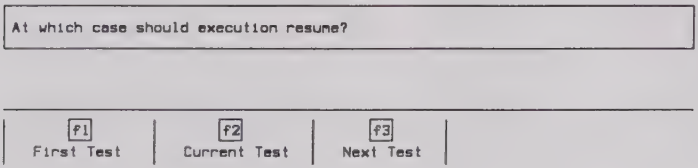
NOTE
Test case execution has stopped when the Run Suite function key is not highlighted.

If *Run Suite* is pressed while a test case is loading, the test case will finish loading, but will not execute. If pressed during execution, the case is assigned the INCONC verdict and the message 'Test System Operator Aborted' is included in the data recording. If pressed while a data recording is being created or while the protocol data exchanged is being printed, the recording and/or printing will complete before execution is interrupted.

6.2 Resuming Test Execution



- Press one of the following function keys to select the test case at which execution will resume.



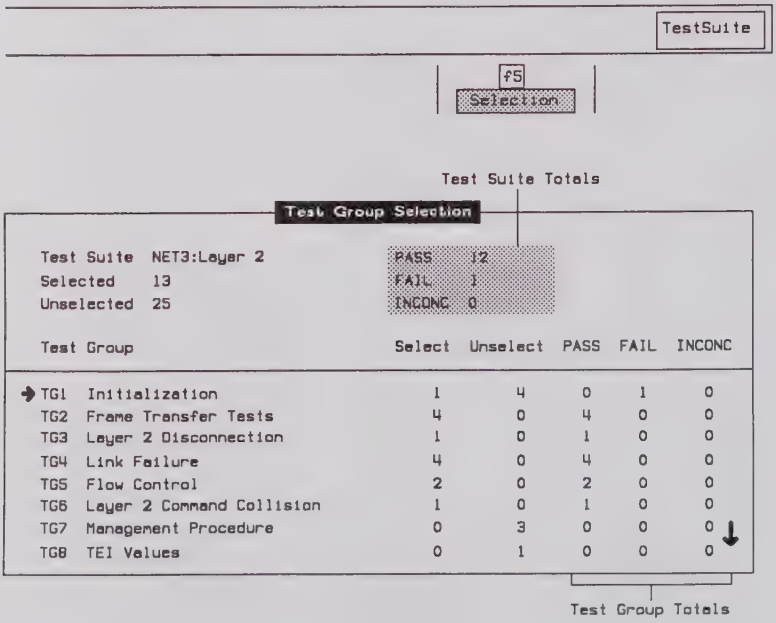
7. REVIEWING TEST RESULTS

The user can inspect verdicts, play back a data recording of a test case, rerun a test, or change the verdict of a test case.

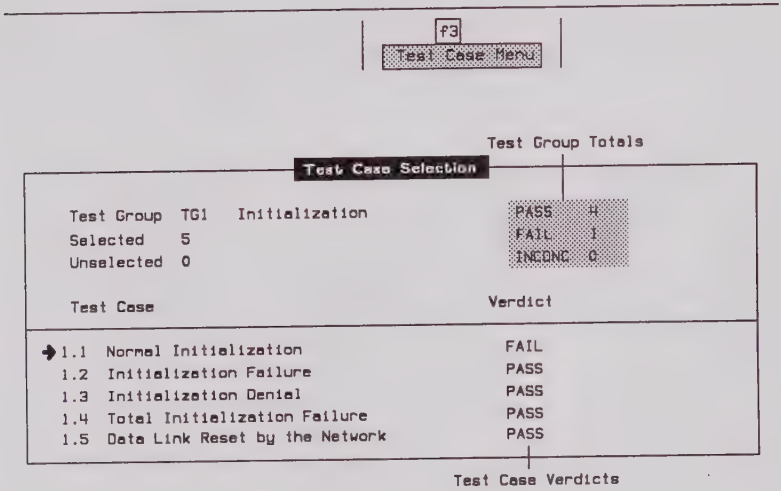
7.1 Inspecting Verdicts

The verdicts on the Test Group Selection menu are displayed for each test group and are also totaled, at the top of the screen, for the entire test suite.

Example:
View the results of the 'Initialization' test group.



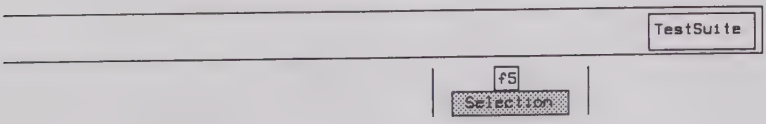
The verdicts on the Test Case Selection menu are displayed for each test case and are also totaled, at the top of the screen, for the entire test group.



7.2 Playing Back Data From Disk

If a data recording was stored during test case execution, the data recording can be opened and the protocol data can be examined.

Example:
Play back the 'TC1.4.FAI' data recording from the 'Total Initialization Failure' test case within the 'Initialization' test group.



→ *TG1 Initialization*

→ *1.4 Total Initialization Failure*

If any data recordings were made for the test case, the Playback Selection menu is displayed. Only data recordings located on the specified disk drive are displayed.

Playback Selection

Disk Drive DRO
Test Case 1.4 Total Initialization Failure

File Name	Verdict	Iteration	Date Created
TC1.4.F03	FAIL	03	1989-09-25 22:35
→ TC1.4.FAI	FAIL	01	1989-09-25 22:24
TC1.4.P01	PASS	01	1989-09-25 22:28
TC1.4.P02	PASS	02	1989-09-25 22:30

The data recording is opened and displayed on the screen.

- Press the ↑ or ↓ cursor keys to scroll line by line.
- Hold down the **CTRL** key and press the ↑ or ↓ cursor keys to scroll page by page.
- Hold down the **CTRL** and **SHIFT** keys and press the ↑ or ↓ cursor keys to go to the beginning or end of the disk recording, respectively.

7.3 Entering Operator Comments

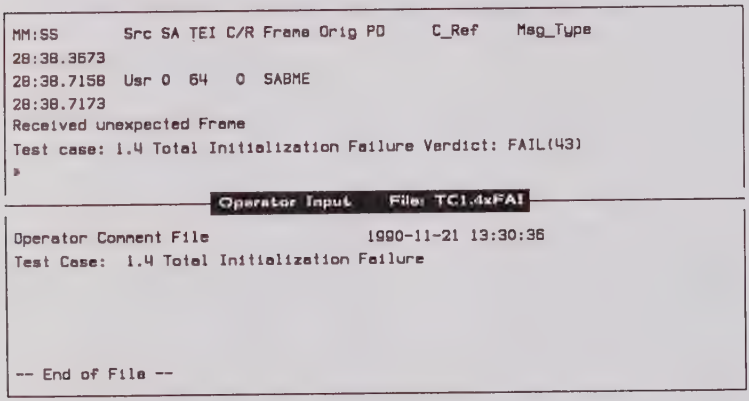
The operator can include comments in the test report while analyzing the data recording for a test case. Operator comments can be entered using the editor functions. Additionally, files containing common expressions can be created and imported as operator comments.

Example 1:
Enter operator comments directly into the operator comment file.

```
MM:SS       Src SA TEI C/R Frame Orig PD     C_Ref    Msg_Type
28:36.3636
28:36.7077  Usr 0  64   0  SABME
28:36.7092
28:37.3508  Usr 16 3    0  SABME
28:37.3523
28:37.7052  Usr 0  64   0  SABME
28:37.7067
28:38.3658  Usr 16 3    0  SABME
28:38.3673
28:38.7158  Usr 0  64   0  SABME
28:38.7173
Received unexpected Frame
Test case: 1.4 Total Initialization Failure Verdict: FAIL(43)
>
```

The Operator Input Window is displayed which contains the following default information:

- Date and time of test execution
- Test case name

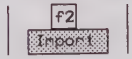

MM:SS Src SA TEI C/R Frame Orig PD C_Ref Msg_Type
28:38.3673
28:38.7158 Usr 0 64 0 SABME
28:38.7173
Received unexpected Frame
Test case: 1.4 Total Initialization Failure Verdict: FAIL(43)
Operator Input Files: TC1.4xFAI
Operator Comment File 1990-11-21 13:30:36
Test Case: 1.4 Total Initialization Failure
-- End of File --

NOTE
The operator input filename is generated by the control software and must not be changed. A disk drive or hard disk device can be specified before the filename.

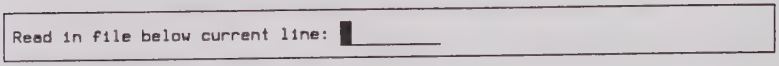
Overwrite	Toggles between overwrite and insert modes.
Import	Imports a specified file.
Delete	Deletes the current character.
Cut Line	Deletes the current line the cursor is on.
Paste Line	Inserts a copy of the last deleted line above the current line.
Save	Saves the current file.
Data Up	Scrolls one line towards the beginning of the data recording.

Data Down	Scrolls one line towards the end of the data recording.
Page Up	Scrolls one screen towards the beginning of the data recording.
Page Down	Scrolls one screen towards the end of the data recording.
Top	Scrolls to the beginning of the data recording.
Bottom	Scrolls to the end of the data recording.

Example 2:
Import the contents of a file to use as an operator comment.



- Enter the filename and press ↵ (RETURN).



```
MM:SS       Src SA TEI C/R Frame Orig PD     C_Ref    Msg_Type
28:38.3673
28:38.7158  Usr 0  64   0  SABME
28:38.7173
Received unexpected Frame
Test case: 1.4 Total Initialization Failure Verdict: FAIL(43)
>
```

```
Operator Input    File: TC1.4xFAI
Operator Comment File                    1990-11-21 13:30:36
Test Case:  1.4 Total Initialization Failure

The IUT transmited more than N200 SABME frames.
4 SABME frames were received.  N200 is set to 3 so the IUT should have sent
only 3 SABME frames.
-- End of File --
```

NOTE
If operator comments have already been entered, the contents of the file will be appended.

7.4 Saving Operator Comments

- Press ↵ (RETURN).

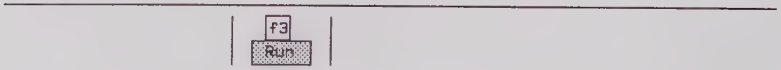
7.5 Rerunning a Test Case

While inspecting the verdicts, a test case can be executed again to verify the verdict.

Example:
Rerun the 'Normal Initialization' test case from the 'Initialization' test group.

→ *TG1 Initialization*

→ *1.1 Normal Initialization*

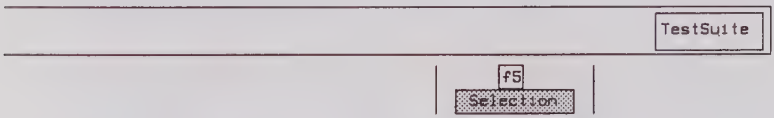


The verdict assigned during this run replaces the previous verdict assigned.

7.6 Changing a Verdict

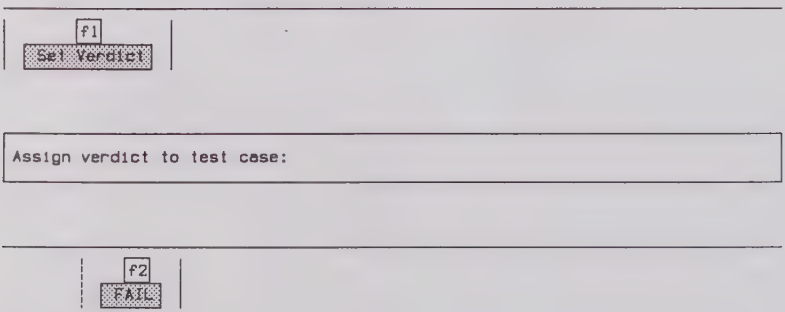
After analyzing the data recording, an INCONC verdict can be changed to PASS or FAIL before the test report is printed.

Example:
Change a verdict from INCONC to FAIL for the 'I Frame Response' test case in the 'Frame Transfer Tests' test group.

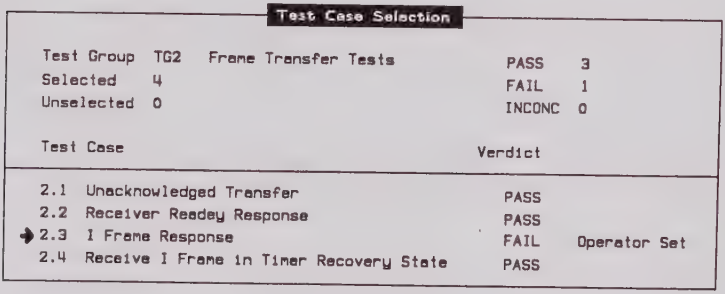


→ *TG2 Frame Transfer Tests*

→ *2.3 I Frame Response*



On the Test Case Selection menu and in test reports, changed verdicts are labeled 'Operator Set'.



NOTE

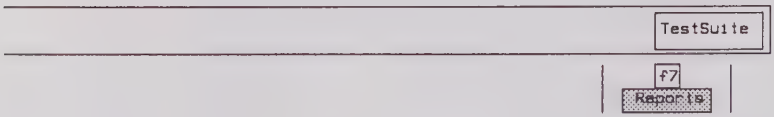
In this example, the FAIL verdict was assigned by the test system operator and the PASS verdicts was assigned by the test system software.

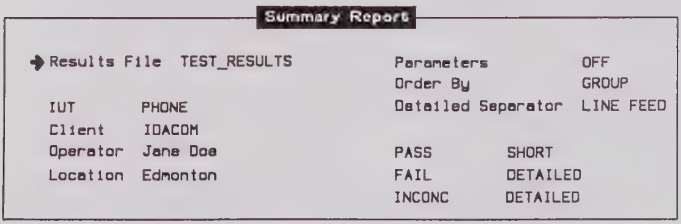
8. PRINTING A TEST REPORT

After the test suite has executed, a test report can be printed.

The test report can contain:

- the names of the IUT, client, operator, and location;
- the test case verdicts;
- operator comments regarding the test case run and results; and
- the decoded protocol data exchanged during the test case.





→ *Results File*
Test suite execution can be interrupted and the results saved. When results are restored, test suite execution will resume at the previous point of interruption. The summary report can then be printed from the saved file.

Save Results	Stores the test results into the specified file.
Restore Results	Retrieves the test results from the specified file.
Clear Results	Sets all test case verdicts to NONE.

NOTE
The PICS and PIXIT are not saved in the results file. The PICS and PIXIT can be saved separately via the PICS and PIXIT Identifiers on the PICS and PIXIT menus, respectively.

→ *IUT*
Name of the particular implementation tested.

→ *Client*
Name of the client for whom testing was performed.

→ *Operator*
Name of test system operator.

→ *Location*
Testing location.

→ *Parameters*

OFF	Omits the PICS and PIXIT from the test report.
ON	Includes the PICS and PIXIT in the test report.

→ *Order By*

VERDICT	Displays all test cases with the same verdict together.
GROUP	Displays test cases in order of execution.

→ *Detailed Separator*

LINE FEED	Prints detailed reports on the same page.
FORM FEED	Prints each detailed report on a new page.

Based on the verdict assigned to the test case, a short or detailed report can be printed.

→ *PASS*
→ *FAIL*
→ *INCONC*

OFF	Test cases with this verdict are not reported.
SHORT	Prints the test group name, test case name, assigned verdict, and branch number.

NOTE
Branch number refers to the path through the test case specification which led to the assigned verdict.

DETAILED — Prints the information provided in the short format plus the protocol data exchanged during the test case in the current display format.

DETAILED & COMMENTS — Prints the information provided in the short format followed by any included operator comments, plus the protocol data exchanged during the test case in the current display format.

To print the test report:

NOTE
Before printing, connect a serial or parallel printer to the back of the tester and configure the printer on the Printer Port Setup menu on the Home processor (see Section 17.4 in the PT300/500 User Manual, or Section 7 Printing in the PT302/502 User Manual).

```
Conformance Test System                Summary Report                1990-01-30 06:06

Test Suite:  NET3: Layer 2             Verdicts Assigned
IUT:         PHONE                      PASS:     32
Client:      IDACOM                     FAIL:     2
Operator:    Jane Doe                   INCONC:   4
Location:    Edmonton

                                        Report Format Ordered by Group
 Selected Cases:      38                 PASS:     SHORT
 Unselected Cases:    0                  FAIL:     DETAILED
 Iterations:          1                  INCONC:   DETAILED

Test Identifier                                          Verdict      Branch #
Test Group:  TG1   Initialization
 1.1 Normal Initialization                               PASS         1
 1.2 Initialization Failure                              PASS         1
 1.3 Initialization Denial                               PASS         30
 1.4 Total Initialization Failure                        PASS         40
 1.5 Data Link Reset by the Network                      PASS         50
Test Group:  TG2   Frame Transfer Tests
 2.1 Unacknowledged Transfer                             PASS         30
 2.2 Receiver Ready Response                             PASS         90
 2.3 I Frame Response                                    PASS         100
 2.4 Receive I Frame in Timer Recovery State             FAIL         111
*-------------------------------------------------------------------------*
Test Case:  2.4  Receive I Frame in Timer Recovery State          1990-01-30 06:08:37
Tester Sends Remove TEI message
55:50.7132  Net 63 127  1  UI     P=0
                    Message name                    :  identity remove
                    Management entity identifier    :  15
                    Reference number ( RI )         :  0
                    Message type                    :  6
                    Action indicator ( AI )         :  127
55:50.7177
55:50.6600  Net 63 127  0  UI     P=0
                    Message name                    :  identity request
                    Management entity identifier    :  15
                    Reference number ( RI )         :  59438
                    Message type                    :  1
                    Action indicator ( AI )         :  127
55:55.6640
55:50.7068  Net 63 127  1  UI     P=0
                    Message name                    :  identity assigned
                    Management entity identifier    :  15
                    Reference number ( RI )         :  59438
                    Message type                    :  2
                    Action indicator ( AI )         :  64
```

Figure 8-1 Sample Summary Report

A. GLOSSARY

Abstract Test Suite (ATS)
The specification of the behavior exhibited by the tester and expected from the IUT to test a specific protocol feature implemented on the IUT. Typically, it is a collection of abstract test cases.

Executable Test Suite (ETS)
The implementation of an abstract test suite that can be executed on a tester.

Executable Test Case
The implementation of an abstract test case which can execute on a tester.

FAIL Verdict
Assigned to a test case when the observed behavior of the IUT is invalid.

INCONC Verdict
Assigned to a test case when the test system cannot determine a verdict. Inconclusive verdicts often occur when the preamble portion of a test case fails before the main body of the test case can be executed.

IUT
An acronym for Implementation Under Test.

PASS Verdict
Assigned to a test case when the observed and expected behavior of the IUT are the same.

PICS
An acronym for Protocol Implementation Conformance Statement. PICS is provided by the system supplier and indicates which protocol features are implemented in the system.

PIXIT
An acronym for Protocol Implementation Extra Information for Testing. PIXIT is provided by the system supplier and specifies information related to the IUT and testing environment which enables a test laboratory to execute a test suite. For example, contents of data packets, timer values, and retransmission counters are specified in the PIXIT.

Test Campaign
The execution of test cases against an IUT using the PICS and PIXIT specified by the supplier.

Test Case
A test case is used to verify a test purpose and may be expressed in either an abstract or executable form.

Test Group
A collection of related test cases.

Test Purpose
An objective focusing on a single conformance requirement, which is derived from the protocol specifications.

Test Suite
A complete set of test cases, possibly combined into nested test groups, that can determine the conformance of an IUT to a specific subset of a protocol standard.

B. PROGRAMMING COMMANDS

The following Interactive Test Language (ITL) commands can be used interactively with the Common Control application to alter its setup.

pass# (-- verdict)
Passes a pass verdict onto the data stack.

fail# (-- verdict)
Passes a fail verdict onto the data stack.

inconc# (-- verdict)
Passes an inconclusive verdict onto the data stack.

ITERATIONS (n --)
Sets the number of iterations for test case execution from 1 to 99.

DELAY-BETWEEN-CASES (n --)
Sets the delay between execution of test cases, where 'n' is defined in tenths of a seconds.

TEST-ID-FRAMES (flag --)
Turns on or off the reporting of test cases.

Example:
Enable test ID frames to be reported.
```
YES TEST-ID-FRAMES
```

FOR-RECORDING (--)
Records results on the currently selected drive.

VERDICT-RECORD (flag \ verdict --)
Enables or disables the recording of a test case verdict.

Example:
Disable recording of pass verdicts.
```
NO pass# VERDICT-RECORD
```

VERDICT-INTERRUPT (flag \ verdict --)
Allows or disallows the interruption of test case execution upon reaching a verdict.

Example:
Enable interruption of test cases when an inconclusive verdict is reached.
```
YES inconc# VERDICT-INTERRUPT
```

PRINT-OFF (verdict --)
Turns off all printing for a test case verdict.

Example:
Turn printing off for failed test cases.
```
fail# PRINT-OFF
```

PRINT-SHORT (verdict --)
Activates printing of short reports for a verdict.

PRINT-DETAILED (verdict --)
Activates printing of detailed reports for a verdict.

E3939/E3910
PT302/PT502

Operating System
Version 3.0 Rev 28

Home Menu
Version 3.1 Rev 3

Product Release Notice

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Hewlett-Packard
IDACOM Telecommunications Operation

Installing Software

A utility is available to automate the software installation process. Install files, which contain hardware-specific information necessary for the installation process, are located on the *Main Operating System* disk, the *Auxiliary Operating System* disk, and the *Home Menu* disk. Only files relevant to your hardware configuration will be installed.

Before you begin...

1. Boot the tester with the Operating System and the Home Menu software.
2. For PT502, insert the *Auxiliary Operating System* disk in floppy drive DR0 and the *Main Operating System* disk in floppy drive DR1.
   or
   For PT302, insert the *Main Operating System* disk in floppy drive DR0.
3. Power up or reboot the tester. Once the operating system loads and the IDACOM logo is displayed, you will be prompted to insert the Home Menu disk.
4. Insert *Home Menu* disk #1 of 2 in floppy drive DR0 and press RETURN.

NOTE

If you are updating your software and have customized any files, back them up before installing this version of software.

To Install the Operating System and Home Menu on the Hard Disk

1. Insert the disk labelled *Operating System* in floppy drive DR0.
2. On the HOME processor, move the topic box to the **Install** topic.
3. Press function key f1 - *Install Software*.
4. Follow the instructions on the screen.

Repeat this procedure to install the Auxiliary Operating System and Home Menu on the hard disk.

Updates

Automatic Updates

A new facility has been added to the Home Menu software that updates applications between actual application releases. The file, UPDATE.B, contains the update information. It is located on hard disk partition WD0 as part of the Home Menu software. The update information is read when the tester is booted up. When an application is loaded, it automatically receives any necessary update information from the UPDATE.B file. If the UPDATE.B file is not present on hard disk partition WD0, the application receives no update information.

Selected Updates

If you only want the updates applied to certain applications, you can manually update each application separately. This does require some work and knowledge of the PT and the application binary names.

Example:
Update X.25 Monitor on application processor 1 (a separate binary exists for each processor to run a copy of the application).

1. Install the new Home Menu software on hard disk partition WD0. This will also install the file UPDATE.B.
2. From the Home Menu, press the ESC key to enter the command line.
3. Enter on the command line: `CPU1`
   Press RETURN. This will change the application processor to number 1.
4. Enter: `" X25_MON.B1" DUP LOCATE_FILE . EXECB`
   Press RETURN. If the file is located, a '1' is displayed on the screen. If a '0' is displayed, the file cannot be located; either re-enter the command, correcting any errors, or return to the Home Menu by entering: `MFTH SWITCH`
   Press RETURN.
5. Enter: `LOAD UPDATE.B`
   Press RETURN.
6. Enter: `" X25_MON.B1" DUP LOCATE_FILE . SAVEB`
   Press RETURN.
7. Enter: `MFTH SWITCH`
   Press RETURN. This returns you to the Home Menu.
8. Press the ESC key to exit the command line.

Repeat this procedure for each application binary that you want to install the updates on. Once you have updated all the desired applications, delete the file UPDATE.B from hard disk partition WD0. This prevents any other applications from automatically receiving the updates.

Changing the Jumpers on the Auxiliary Interface Module

To ensure correct CTS/RTS flow control of the modem connection, changes were made to the Home Version 3.1 software. In order for these changes to be effective, a hardware modification is required, unless your tester has a sticker on the Auxiliary Interface Module indicating the new position of the two jumpers responsible for flow control; this indicates the modification has been done. If this sticker is not present, two jumpers inside the Auxiliary Interface Module need to be moved.

You can perform this simple modification yourself using basic tools. To perform the modification, follow the instructions on the following pages, both parts 1 and 2. This modification can also be performed by the Hewlett-Packard service centre nearest you. To contract Hewlett-Packard to perform the hardware modification, contact the nearest HP service center.

Failure to modify the hardware will, for example, result in toggling the DTR lead on the remote port during attempts to provide RTS flow control. For correct flow control, ensure that the hardware modification is made.

NOTE

The Auxiliary Interface Module on your tester may not look exactly as depicted in Figure 1. The Remote Reset terminals and the Auxiliary Keyboard connector are not present on all modules. Despite the difference between the module types, the modification procedure is exactly the same.

Part 1: To Remove and Disassemble the Module and Change the Jumpers

WARNING

Follow anti-static procedures when performing all the following tasks. Failure to do so could seriously damage the tester.

1. Disconnect the tester from the power source.
2. Using a flat-headed screw driver, remove the three screws holding the Auxiliary Interface Module in the rear of the tester (as depicted in Figure 1).

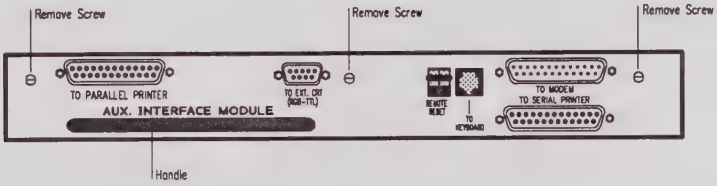

Figure 1 Auxiliary Interface Module - Front Panel

3. Gripping the handle, pull carefully and remove the module from the tester.
4. Using a 5 mm nut driver, remove the eight nuts from the front of the module (as depicted in Figure 2).

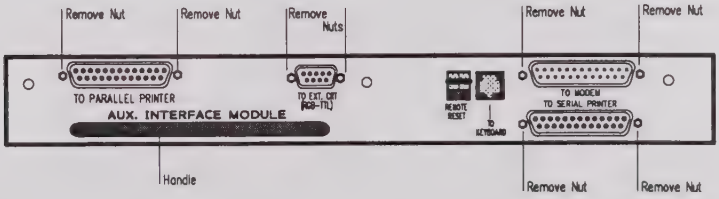

Figure 2 Auxiliary Interface Module - Front Panel

5. Turn the module over. Using a flat-headed screw driver, remove the two screws on the 96 pin connector (as depicted in figure 3). This will allow you to remove the handle and front face plate from the module.

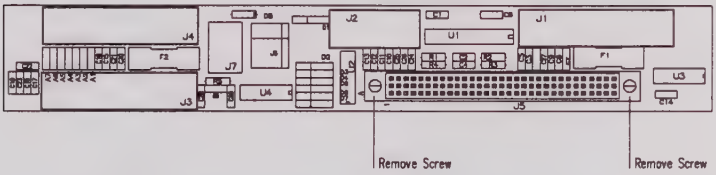

Figure 3 Auxiliary Interface Module - Inside Reverse View

6. Turn the module over so that it is oriented as in Figure 4; ensure that the jumpers are in the positions indicated. To change the jumpers, use needle nose pliers and gently remove the jumper; carefully insert the jumper into the correct position.
   - The two jumpers in the block at lower right have to be changed. These are the jumpers responsible for flow control. Move them to the positions indicated in Figure 4.
   - The three jumpers in the two centre blocks (one jumper at the top and two at the bottom) should already be in the correct positions; if they are not, move them to the positions indicated in Figure 4.

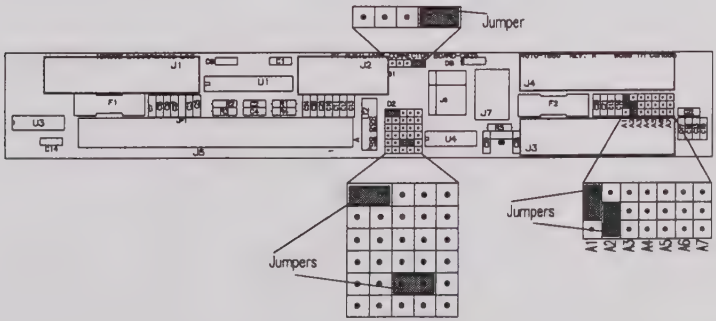

Figure 4 Auxiliary Interface Module - Inside Front Panel

Once complete, you are ready to reassemble and reinstall the Auxiliary Interface Module as described in Part 2, beginning on the following page.

Part 2: To Reassemble and Reinstall the Module

WARNING
Follow anti-static procedures when performing all the following tasks. Failure to do so could seriously damage the tester.

1. Place the face plate and handle on the front of the module. Insert the two screws through the 96 pin connector to attach (as depicted in Figure 5).

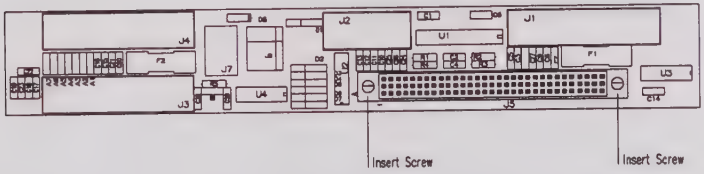

Figure 5 Auxiliary Interface Module - Inside Reverse View

2. Attach the 8 nuts to the front of the module (as depicted in Figure 6).

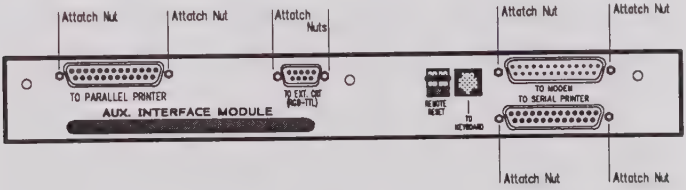

Figure 6 Auxiliary Interface Module - Front Panel

3. Carefully insert the module into the rear of the tester.

4. Insert the three screws into the module and tighten (as depicted in Figure 7).

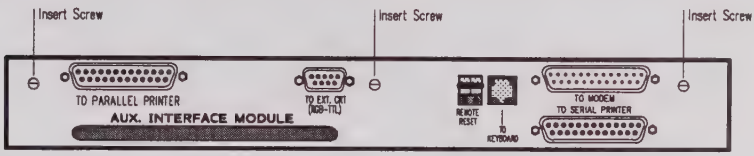

Figure 7 Auxiliary Interface Module - Front Panel

5. On the front plate of the Auxiliary Interface module, attach the sticker (included in this Product Release Notice) that indicates that the hardware modification has been completed.

   Once complete, you are ready to resume protocol testing.

Enhancement (Version 3.0-3.1 Home Rev 3)

- **extend.ao File**
  The file extend.ao is no longer required.

Change (Version 3.0-3.1 Home Rev 3)

- **Remote Port Default Speed**
  The default speed for the remote port has been changed to 384000.

Problems Fixed (Version 3.0-3.1 Home Rev 3)

Loading Files with Little Memory Remaining (Type B Testers)
Home application activity is no longer suspended when loading a file with little memory remaining on Home (Type B machines only).

Loading Bisync Applications and Frame Relay
Bisync applications and Frame Relay can can now be loaded multiple times and other applications can be loaded after them.

Running PTremote after Loading Kermit and FILEX
Loading Kermit, then FILEX, and then running PTremote no longer crashes the tester.

Files Backup and Restore Menu
'Action Code damaged stack' warning messages are no longer displayed when selecting floppy disks.

'Group highlight code returned an invalid value' warning messages are no longer displayed when selecting floppy disks.

Files Initialize/Partition Hard Drive Menu
Partition sizes up to 999999 K are now allowed.

CPU 1 to CPU 7 Commands
The system no longer crashes when using remote port commands to switch to application processors while displaying menu screens.

PT502 Dual T1/E1/WAN Application Load Menu
You can now load X.25 and X.75 from the load menu.

Known Problem (Version 3.0-3.1)

Timeslots in T1-E1 Configuration (units ordered with option #003)
When you allocate timeslots in Emulation mode then switch to Monitor mode to load and run an application, you can only see one side of the traffic.

Workaround:
Select the interface mode (Monitor or Emulation) first, then relocate the timeslots.

Known Problems (Version 3.0-3.0)

Switching Between T1 and E1 Framing Formats
Switching between T1 and E1 framing with an application loaded will stop the application.

Workaround:
First, switch between the T1 and E1 framing formats, then reload the desired application.

T1-E1 Port In EMULATE-BANTAM Mode
When a T1-E1 port is put into EMULATE_BANTAM mode, it is considered to be in EMULATE-USER mode for the purpose of its TX/RX display in the applications. As a result, it is possible that both sides of the data stream could be displayed as TX.

Workaround:
The TX/RX display for a T1-E1 port using bantam cables can be changed to EMULATE-NETWORK by configuring the port as EMULATE-NETWORK and swapping the bantam cables 'as necessary' to align the RX (data in) and TX (data out) directions. The term 'as necessary' means that the RX (Data In) and TX (Data Out) labels on the connector module will be reversed when one of the following ports is configured as EMULATE-NETWORK:

- T1-E1 Port 1 or Port A on any machine configuration.
- T1-E1 Port 2 on a Dual T1-E1 PT502.

Compiling Files
A compilation error will occur when compiling a source or configuration file containing a quote string with the first character being an ASCII Null character.

Workaround:
Instead of the quote string use:
`X" 00 . . . ."`

DOS-Files: Known Problems (Version 3.1)

Copying
When copying a file to an MS-DOS® disk when a data recording is open, the data file cannot be accessed after the copying process is complete.

COPY_FILE Command
The command COPY_FILE does not work unless the destination filename is longer than 3 characters.

Documentation

The following documentation corresponds to this release of the product. Insert this Product Release Notice in front of the PT302/PT502 User Manual and immediately after the divider tab to keep a record of this release.

- **PT302/PT502 User Manual** - Version 3.0-3.1
- **Programmer's Reference Manual** - Version 3.0-3.1
- **DOS-Files User Manual** - Version 3.1

E3939/E3910
PT302/PT502

Operating System
Version 3.0

Home Menu
Version 3.1 Rev 1

Product Release Notice

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Installing Software

A utility is available to automate the software installation process. Install files, which contain hardware-specific information necessary for the installation process, are located on the *Main Operating System* disk, the *Auxiliary Operating System* disk, and the *Home Menu* disk. Only files relevant to your hardware configuration will be installed.

Before you begin...

1. Boot the tester with the Operating System and the Home Menu software.
2. For PT502, insert the *Auxiliary Operating System* disk in floppy drive DR0 and the *Main Operating System* disk in floppy drive DR1.
   or
   For PT302, insert the *Main Operating System* disk in floppy drive DR0.
3. Power up or reboot the tester. Once the operating system loads and the IDACOM logo is displayed, you will be prompted to insert the Home Menu disk.
4. Insert *Home Menu* disk #1 of 2 in floppy drive DR0 and press RETURN.

NOTE
If you are updating your software and have customized any files, back them up before installing this version of software.

To Install the Operating System and Home Menu on the Hard Disk

1. Insert the disk labelled *Operating System* in floppy drive DR0.
2. On the HOME processor, move the topic box to the **Install** topic.
3. Press function key f1 - *Install Software.*
4. Follow the instructions on the screen.

Repeat this procedure to install the Auxiliary Operating System and Home Menu on the hard disk.

Updates

Automatic Updates
A new facility has been added to the Home Menu software that updates applications between actual application releases. The file, UPDATE.B, contains the update information. It is located on hard disk partition WD0 as part of the Home Menu software. The update information is read when the tester is booted up. When an application is loaded, it automatically receives any necessary update information from the UPDATE.B file. If the UPDATE.B file is not present on hard disk partition WD0, the application receives no update information.

Selected Updates
If you only want the updates applied to certain applications, you can manually update each application separately. This does require some work and knowledge of the PT and the application binary names.

Example:
Update X.25 Monitor on application processor 1 (a separate binary exists for each processor to run a copy of the application).

1. Install the new Home Menu software on hard disk partition WD0. This will also install the file UPDATE.B.
2. From the Home Menu, press the ESC key to enter the command line.
3. Enter on the command line: `CPU1`
   Press RETURN. This will change the application processor to number 1.
4. Enter: `" X25_MON.B1" DUP LOCATE_FILE . EXECB`
   Press RETURN. If the file is located, a '1' is displayed on the screen. If a '0' is displayed, the file cannot be located; either re-enter the command, correcting any errors, or return to the Home Menu by entering: `MFTH SWITCH`
   Press RETURN.
5. Enter: `LOAD UPDATE.B`
   Press RETURN.
6. Enter: `" X25_MON.B1" DUP LOCATE_FILE . SAVEB`
   Press RETURN.
7. Enter: `MFTH SWITCH`
   Press RETURN. This returns you to the Home Menu.
8. Press the ESC key to exit the command line.

Repeat this procedure for each application binary that you want to install the updates on. Once you have updated all the desired applications, delete the file UPDATE.B from hard disk partition WD0. This prevents any other applications from automatically receiving the updates.

Changing the Jumpers on the Auxiliary Interface Module

To ensure correct CTS/RTS flow control of the modem connection, changes were made to the Home Version 3.1 software. In order for these changes to be effective, a hardware modification is required, unless your tester has a sticker on the Auxiliary Interface Module indicating the new position of the two jumpers responsible for flow control; this indicates the modification has been done. If this sticker is not present, two jumpers inside the Auxiliary Interface Module need to be moved.

You can perform this simple modification yourself using basic tools. To perform the modification, follow the instructions on the following pages, both parts 1 and 2. This modification can also be performed by the Hewlett-Packard service centre nearest you. To contract Hewlett-Packard to perform the hardware modification, contact the nearest HP service center.

Failure to modify the hardware will, for example, result in toggling the DTR lead on the remote port during attempts to provide RTS flow control. For correct flow control, ensure that the hardware modification is made.

NOTE

The Auxiliary Interface Module on your tester may not look exactly as depicted in Figure 1. The Remote Reset terminals and the Auxiliary Keyboard connector are not present on all modules. Despite the difference between the module types, the modification procedure is exactly the same.

Part 1: To Remove and Disassemble the Module and Change the Jumpers

WARNING
Follow anti-static procedures when performing all the following tasks. Failure to do so could seriously damage the tester.

1. Disconnect the tester from the power source.
2. Using a flat-headed screw driver, remove the three screws holding the Auxiliary Interface Module in the rear of the tester (as depicted in Figure 1).

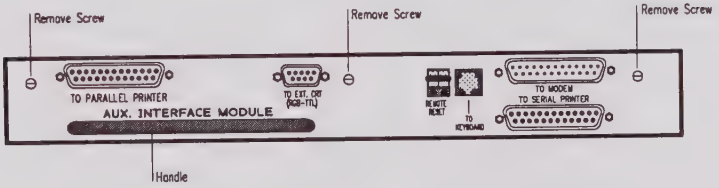

Figure 1 Auxiliary Interface Module - Front Panel

3. Gripping the handle, pull carefully and remove the module from the tester.
4. Using a 5 mm nut driver, remove the eight nuts from the front of the module (as depicted in Figure 2).

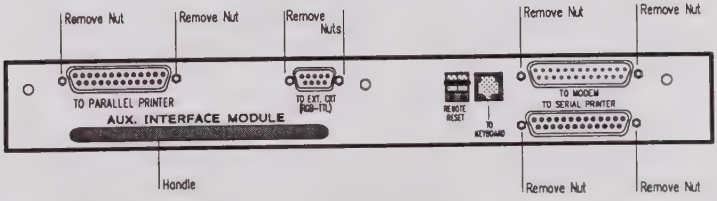

Figure 2 Auxiliary Interface Module - Front Panel

5. Turn the module over. Using a flat-headed screw driver, remove the two screws on the 96 pin connector (as depicted in figure 3). This will allow you to remove the handle and front face plate from the module.

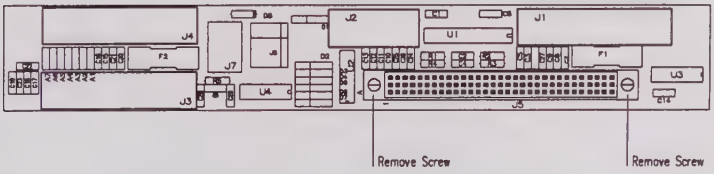

Figure 3 Auxiliary Interface Module - Inside Reverse View

6. Turn the module over so that it is oriented as in Figure 4; ensure that the jumpers are in the positions indicated. To change the jumpers, use needle nose pliers and gently remove the jumper; carefully insert the jumper into the correct position.
   - The two jumpers in the block at lower right have to be changed. These are the jumpers responsible for flow control. Move them to the positions indicated in Figure 4.
   - The three jumpers in the two centre blocks (one jumper at the top and two at the bottom) should already be in the correct positions; if they are not, move them to the positions indicated in Figure 4.

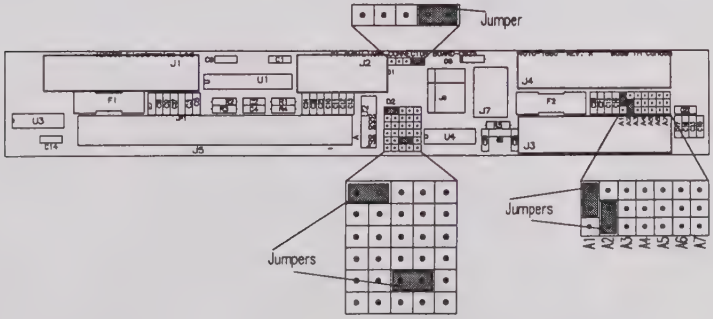

Figure 4 Auxiliary Interface Module - Inside Front Panel

Once complete, you are ready to reassemble and reinstall the Auxiliary Interface Module as described in Part 2, beginning on the following page.

Part 2: To Reassemble and Reinstall the Module

WARNING
Follow anti-static procedures when performing all the following tasks. Failure to do so could seriously damage the tester.

1. Place the face plate and handle on the front of the module. Insert the two screws through the 96 pin connector to attach (as depicted in Figure 5).

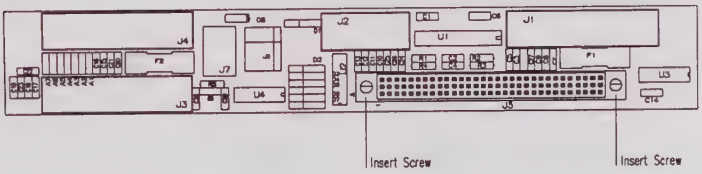

Figure 5 Auxiliary Interface Module - Inside Reverse View

2. Attach the 8 nuts to the front of the module (as depicted in Figure 6).

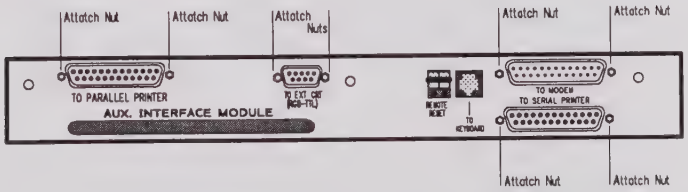

Figure 6 Auxiliary Interface Module - Front Panel

3. Carefully insert the module into the rear of the tester.

4. Insert the three screws into the module and tighten (as depicted in Figure 7).

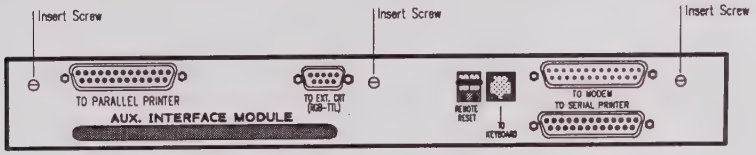

Figure 7 Auxiliary Interface Module - Front Panel

5. On the front plate of the Auxiliary Interface module, attach the sticker (included in this Product Release Notice) that indicates that the hardware modification has been completed.

   Once complete, you are ready to resume protocol testing.

Toolkits (Version 3.0-3.1 Rev 2)

Included in the Toolkits are the compiler for creating your own test scripts, memory management, printing control, remote control, and the graphical user interface (GUI) tools. All protocol applications and the Home Menu are built on top of the Toolkits. The Toolkits also contain the mechanism for updating applications automatically or manually as described previously in this Product Release Notice. The Toolkits have been updated for this release, as indicated below.

- **Printing and PT Remote Control**
  Speed has been improved.

  Characters are no longer lost.

  Timeout messages no longer occur.

- **Application Loading**
  Application loading time has been improved, since the disk devices are only examined once.

Problems Fixed (Version 3.0-3.1 Rev 1)

PR **UPDATE.B File**
The file UPDATE.B, found on the Home Menu disk, has been revised to prevent problems with applications performing memory allocation.

Enhancements (Version 3.0-3.1)

- **The T1-E1 Configuration Commands**
  The commands ASSIGN_TIMESLOTS, T1E1_TIMESLOTS? and T1E1_GENERATE_ERROR, published in Programmer's Reference Manual, have been rewritten. Previously, they were not stated clearly.

- **Loading Applications**
  DASS/MUX and DPNSS can now be loaded on the T1-E1 low speed channel.
  DXI simulation application can now be loaded on the T1-E1 high speed channel.
  ISDN and SDLC/SNA Statistic application can now be loaded on the WAN port.

- **File Length in the Editor**
  The maximum number of lines in a file will differ depending on the amount of free memory. If the tester has more than 360 Kbytes free, the editor allows 2000 lines; otherwise the limit is 408 lines.

- **HOME.D0**
  Unique HOME.D0 files now exist for RTPHome as well as for HOME.

- **FILEX and Kermit**
  Both FILEX and Kermit allow for expanding tabs when receiving files.

- **DASS/MUX and DPNSS**
  DASS/MUX and DPNSS can now be loaded on the T1-E1 low speed channel.

- **DXI Simulation**
  The DXI Simulation application can be loaded on the T1-E1 high speed channel.

- **ISDN and SDLC/SNA Statistics**
  ISDN and SDLC/SNA Statistics applications can now be loaded using the WAN port.

Changes (Version 3.0-3.1)

- **PT Serial Number in Data Recordings**
  The PT serial number in data recordings has been removed.

- **FILEX**
  FILEX is now a loadable binary. Note that only FILEX or Kermit can be loaded at one time.

- **Kermit and FILEX**
  Kermit and FILEX binary files are no longer incompatible.

Problems Fixed (Version 3.0-3.1)

PR **File Editor Backup Function**
The backup option while saving now works correctly. Previously, when you attempted to back up a file on a different drive using the save function, no error message was given to indicate that is not allowed. An error message "Can only back up the file on to the same drive." is now displayed.

PR **Timeslot Bit Rate** (units ordered with option #012)
The timeslot bit rate for the single timeslot in the T1-E1 configuration can now be set properly. Previously, when the timeslot bit rate was set in the T1-E1 Configuration menu, the timeslot bit rate was set only for the Fractional T1-E1 channel but not for the Single Timeslot channel. It is now set for both channels.

PR **T1-E1 Frame Error Generation** (units ordered with option #003)
Since the feature is not supported, the menu item used for generating Frame Errors on T1-E1L1 Error Generation menu is no longer accessible.

PR **Recording Files for T1-E1 Application**
When recording files (for a T1-E1 application) to a different application processor, the header titles are now consistent. Previously, for AP#3 and AP#4, they were both "T1-E1". They now are "Port 3" for AP#3 and "Port 4" for AP#4.

PR **Value Left on the Stack**
The value "1" is no longer left on the stack of the HOME processor after booting a unit with a T1-E1 interface.

Loading Applications on the T1-E1 Port
Previously, ISDN, Group 4 Fax, SDLC/SNA and V.120 applications could only be loaded using the T1-E1 application menus for AP#2 and AP#4. They can now be loaded using loading commands executed from the command line.

Installing OS Files on the Hard Disk
When installing OS files from floppy to hard disk using the **Install** topic (for a unit with a V.110 FEP board the os.fep) *.lib and *.mcs files are now properly installed.

Loading Kermit
When loading Kermit after installing software on the hard disk, the tester no longer crashes.

Kermit and FILEX Binary Files
Kermit and FILEX binary files are no longer incompatible.

ISDN and SDLC/SNA Statistics Applications
The ISDN and SDLC/SNA Statistics applications can now be loaded using the WAN port.

Gopher Modules
1s are now transmitted rather than 0s in bit 8 in 56 kybtes mode.

Known Problem (Version 3.0-3.1)

Timeslots in T1-E1 Configuration (units ordered with option #003)
When you allocate timeslots in Emulation mode then switch to Monitor mode to load and run an application, you can only see one side of the traffic.

Workaround:
Select the interface mode (Monitor or Emulation) first, then relocate the timeslots.

Enhancements (Version 3.0-3.0)

- **Floppy Drive Boot Software**
  New floppy drive boot software is available in case of hard drive failures or trouble with one of the two floppy drives.

- **Hard Drive Partitions**
  If your tester (Model C) has a SCSI hard drive, up to 32 partitions are now available.

- **High Density Floppy Drives**
  High density floppy disks are now supported on the units with a SCSI hard drive. All disk or file operations are supported except for the Backup function and DOS files conversion, which both use dual density disks.

- **DOS Files**
  The file system for DOS files is now available on the Home Menu.

- **New File Type**
  You can now list these additional file types: executable files (EXEC); user files (USER); conformance files or special configuration files for SS#7 and USM applications (CONF); Test Manager object files (TOBJ); active object files (AOBJ); and ASCII text files (TEXT).

- **Testports Topic**
  Function keys have been added to indicate the application processor number and interface type.

- **Single Timeslot Channel**
  The single timeslot channel is now available on the T1-E1 port.

Known Problems (Version 3.0-3.0)

Switching Between T1 and E1 Framing Formats
Switching between T1 and E1 framing with an application loaded will stop the application.

Workaround:
First, switch between the T1 and E1 framing formats, then reload the desired application.

T1-E1 Port In EMULATE-BANTAM Mode
When a T1-E1 port is put into EMULATE_BANTAM mode, it is considered to be in EMULATE-USER mode for the purpose of its TX/RX display in the applications. As a result, it is possible that both sides of the data stream could be displayed as TX.

Workaround:
The TX/RX display for a T1-E1 port using bantam cables can be changed to EMULATE-NETWORK by configuring the port as EMULATE-NETWORK and swapping the bantam cables 'as necessary' to align the RX (data in) and TX (data out) directions. The term 'as necessary' means that the RX (Data In) and TX (Data Out) labels on the connector module will be reversed when one of the following ports is configured as EMULATE-NETWORK:

- T1-E1 Port 1 or Port A on any machine configuration.
- T1-E1 Port 2 on a Dual T1-E1 PT502.

Compiling Files
A compilation error will occur when compiling a source or configuration file containing a quote string with the first character being an ASCII Null character.

Workaround:
Instead of the quote string use:
`X" 00 . . . ."`

DOS-Files: Known Problems (Version 3.1)

Copying
When copying a file to an MS-DOS® disk when a data recording is open, the data file cannot be accessed after the copying process is complete.

COPY_FILE Command
The command COPY_FILE does not work unless the destination filename is longer than 3 characters.

Documentation

The following documentation corresponds to this release of the product. Insert this Product Release Notice in front of the PT302/PT502 User Manual and immediately after the divider tab to keep a record of this release.

- **PT302/PT502 User Manual** - Version 3.0-3.1
- **Programmer's Reference Manual** - Version 3.0-3.1
- **DOS-Files User Manual** - Version 3.1

PT302/PT502

Protocol Tester

User Manual

Operating System Version: 3.0
Home Menu Version: 3.1
Part Number: 5961-7517

Printed in Canada, April 1995

Hewlett-Packard
IDACOM Telecommunications Operation

Notice

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WARNINGS

Maintain ground to avoid electrical shock. No operator serviceable parts inside. Refer all servicing to qualified personnel. For continued protection against fire hazard, replace fuse with same type and rating.

Warranty

A copy of the specific warranty terms applicable to your Hewlett-Packard product and replacement parts can be obtained from your local Sales and Service office.

Printing History

The version number of this manual corresponds to the Operating System number. This manual will be re-issued when extensive changes are made to the software. Partial manual updates may be issued to correct errors or to reflect minor changes in the software.

Hewlett-Packard
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Product Support:
Tel: 1-800-661-3868 (In North America)
403-430-2770 (Outside North America)
Fax: 403-430-2700

Safety and Environmental

This apparatus has been tested in accordance with IEC Publication 348 and has been supplied in a safe condition. The following information and warnings should be followed in order to ensure safe operations.

Temperature, operating: -5 to +40 degrees C
non-operating: -20 to +75 degrees C

Humidity: 15-95% RH (non-condensing).
The apparatus has been designed for indoor use.

Power Requirements: operating range 90-135 V~ and 180-265V~ 47-63 Hz 550VA MAX; nominal input 120 or 220 volts
The main plug must be inserted in a socket outlet provided with a protective earth (ground) contact.

Fuse: 120V: 6A/125V 240V: 3.15/250V 5x20mm M
Replace fuse with one of the correct rating. Do not use wire, short out the fuse holder, or improvise the fuse. Turn off power before replacing the fuse.

Ventilation:
The fan exhaust port at the back of the PT chassis must not be impeded. Blockage can contribute to elevated operating temperatures which can result in higher than normal failure rates. Ensure that there is at least 6" (15.25 cm) between the back of the unit and any obstructions.

No user serviceable parts inside. Refer to qualified service personnel.

When the apparatus is connected to the power supply, terminals may be live and the opening of covers or removal of parts is likely to expose live parts. Disconnect the apparatus from all voltage sources before opening it for any adjustment, repair, or maintenance. Capacitors inside the apparatus may still be charged, even if disconnected from all power sources.

Do not operate the apparatus if it appears to be damaged or fails to perform the intended measurements.

Certification
Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (formerly National Bureau of Standards), to the extent allowed by that organization's calibration facility, and to the calibration facilities of other International Standards Organization members.

Warranty
This Hewlett-Packard product is warranted against defects in materials and workmanship for a period of three years from date of shipment. Duration and conditions of warranty from this product may be superceded when the product is integrated into (becomes part of) other HP products. During warranty period, Hewlett-Packard Company will, at its option, either repair or replace products which prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by Hewlett-Packard (HP). Buyer shall prepay shipping charged to HP and HP shall pay shipping taxes for products returned to HP from another country.

HP warrants that its software and firmware designated by HP for use with a product will execute its programming instructions when properly installed on that product. HP does not warrant that the operation of the product, software, or firmware will be uninterrupted or error free.

Limitation of Warranty
The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied products or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the products, or improper site preparation or maintenance.

The design and implementation of any circuit on this product is the sole responsibility of the Buyer. HP does not warrant the Buyer's circuitry or malfunctions of HP products that result from the Buyer's circuitry. In addition, HP does not warrant any damage that occurs as a result of the Buyer's circuit or any other defects that result from Buyer-supplied products.

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Additional Information for Test and Measurement Equipment:
If test and measurement equipment is operated with unscreened cables and/or used for measurements on open setups, the user has to ensure that under operating conditions the Radio Interference Limits are still met at the border of the user's premises.

Safety Symbols

Instruction manual symbol affixed to product. Indicates that the user must refer to the manual for specific Warning or Caution information to avoid personal injury or damage to the product.

Indicates the field wiring that must be connected to earth ground before operating the equipment – protects against electrical shock in case of fault.

or

Frame or chassis ground terminal – typically connects to the equipment's metal frame.

Alternating current (ac)

Direct current (dc)

Indicates hazardous voltages

Warnings
The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these standards of design, manufacture, and intended use of the product. Hewlett-Packard Company assumes no liability for the customer's failure to comply with these requirements.

Ground the Equipment: For safety Class 1 equipment (equipment having a protective earth terminal), an uninterruptible safety earth ground must be provided from the mains power source to the product input wiring terminals or supplied power cable.

DO NOT operate the product in an explosive atmosphere or in the presence of flammable gasses or fumes.

For continued protection against fire, replace the line fuse(s) only with fuse(s) of the same voltage and current rating and type. DO NOT use repaired fuses or short-circuited fuseholders.

Keep away from live circuits: Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to Hewlett-Packard Sales and Service Office for service and repair to ensure the safety features are maintained.

DO NOT substitute parts or modify equipment: Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to a Hewlett-Packard Sales and Service Office for service and repair to ensure features are maintained.

Avertissement
Cet appareil repond aux normes de la "Classe de securite I" et est muni d'un fil de mise a la terre pour votre protection.

Pour prevenir les risques de choc electrique, la broche de mise a la terre du cordon d'alimentation ne doit pas etre desactivee.

Restrictions d'utilisation
L'utilisateur se doit d'observer les mesures de precaution enumereesci-dessous pour toutes les phases d'utilisation, de service et de reparation de cet appareil. Le fait de ne pas s'y conformer equivaut a ne pas respecter les mises en gardes specifiques contenues dans ce manuel et constitue une violation des normes de securite relatives a la conception, la fabrication et l'utilisation prevue de cet appareil. La societe Hewlett-Packard n'assume aucune responsabilite envers un client qui manquerait de se conformer a ces exigences.

Mise a la terre
Afin de minimiser les risques de choc electrique, le chassis et le cabinet de l'appareil doivent etre mis ala terre. L'appareil est equipe d'un cordon d'alimentation muni d'une fiche homologuee a trois lames, compatible c.a. La prise murale et la prise femelle de la rallonge electrique doivent respecter les normes de securite de la "Commision electrotechnique internationale" (IEC)

Environnement
Ne faites pas fonctionner cet appareil en presence de gaz inflammables ou de vapeurs dangereuses. L'utilisation de n'importe quel appareil electrique dans ces conditions constitue un risque eleve pour votre securite.

Service et ajustement
Des "tensions dangereuses" resident dans cet appareil. Par consequent, le service et l'ajustement doivent etre effectue uniquement par une personne qualifiee.

Ne remplacez pas de composantes lorsque le cordon d'alimentation est sous tension. Il pourrait y avoir presence de "tension dangereuses" meme lorsque l'appareil est deconnecte.

Manipulation du tube cathodique
Une manipulation brusque, ou le fait de secouer l'appareil, peut provoquer le bris du tube cathodique. L'implosion qui s'en suivrait entrainerait la dispersion a grande velocite d'eclats de verre. Le retrait ou l'installation du tube cathodique ne doit etre execute que par un technicien qualifie, portant un masque et des gants de securite homoloques.

Service non autorise
L'installation de pieces etrangeres, ou touts moduification apportee a l'appereil sans le consentement de Hewlett-Packard est formellement interdit. Le fait de proceder a de tels modifications sans autorisation pourrait entrainer l'annulation de la garantie de l'appareil ou de tout contrat de service.

Pour un service et des reparations autorisees, retournez l'appareil a un point de vente et service Hewlett-Packard.

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1
About the PT302/PT502

In This Chapter

- *Overview*
- *The PT302 - At a Glance*
- *The PT502 - At a Glance*
- *Internal Architecture*
- *Software*

Overview

The PT302/PT502 is a high-end portable protocol tester designed for testing LAN interconnection protocols at speeds of up to:

- 2.048 Mb/s for Wide Area Network (WAN) or E1 interfaces
- 1.544 Mb/s for a T1 interface

The PT302/PT502 can be used to monitor and analyze protocol implementations, simulate network and customer premise equipment (CPE), and perform conformance testing for certification and acceptance. In addition, the dual port WAN option and the dual port T1-E1 option provide end-to-end synchronized analysis capabilities.

The PT302/PT502 can display each supported protocol layer in different formats, including hex, ASCII/EBCDIC characters, or decoded text. The display format is chosen independently for each layer.

The entire data stream can be displayed on the screen, captured to a RAM buffer, or recorded to disk. Filters can be activated to reduce the amount of data being displayed, captured, or recorded. Triggers can also be set to fire when specified conditions are satisfied to pinpoint the occurrence of certain events. Data, captured to RAM or disk, can be quickly searched to locate specific areas of interest.

Emulation application software is available that can automatically and correctly respond to data on the line. The user can force invalid behavior to observe the reaction of the device under test (DUT).

Test script support provides the capability to add custom decoding of upper protocol layers. Test scripts can also be developed to automate and easily repeat test scenarios.

Some executable conformance test suites are available, which are based on specifications developed by various standards bodies. These suites can be used for conformance or acceptance testing or during development of a 'conform by design' approach.

The PT302/PT502 user interface provides three modes of operation:

- Menu Mode
- Command Mode
- Remote Mode

Menu Mode is an easy-to-use interface consisting of multiple window displays, menus, topics, and function key control. This is the default mode of operation.

Command Mode bypasses menu mode; all commands are entered from the keyboard. See the Programmer's Manuals for complete lists of commands. Pressing the ESC key toggles between command mode and menu mode.

Remote Mode can be used to control programs running on application processors via the modem port. Remote mode uses a command interface. See the Programmer's Reference Manual for a list of available commands.

Files can be transferred between the tester and any system with XMODEM protocol support or PTKermit. See chapter 12 'Transferring Files Using FILEX' or chapter 13 'Transferring Files Using PTKermit' for more information.

Menu mode is available remotely with the optional RTP (Remote Test Package) software or on an HP workstation using the PT remote manager software. Contact your local HP representative for more information.

The PT302 - At a Glance

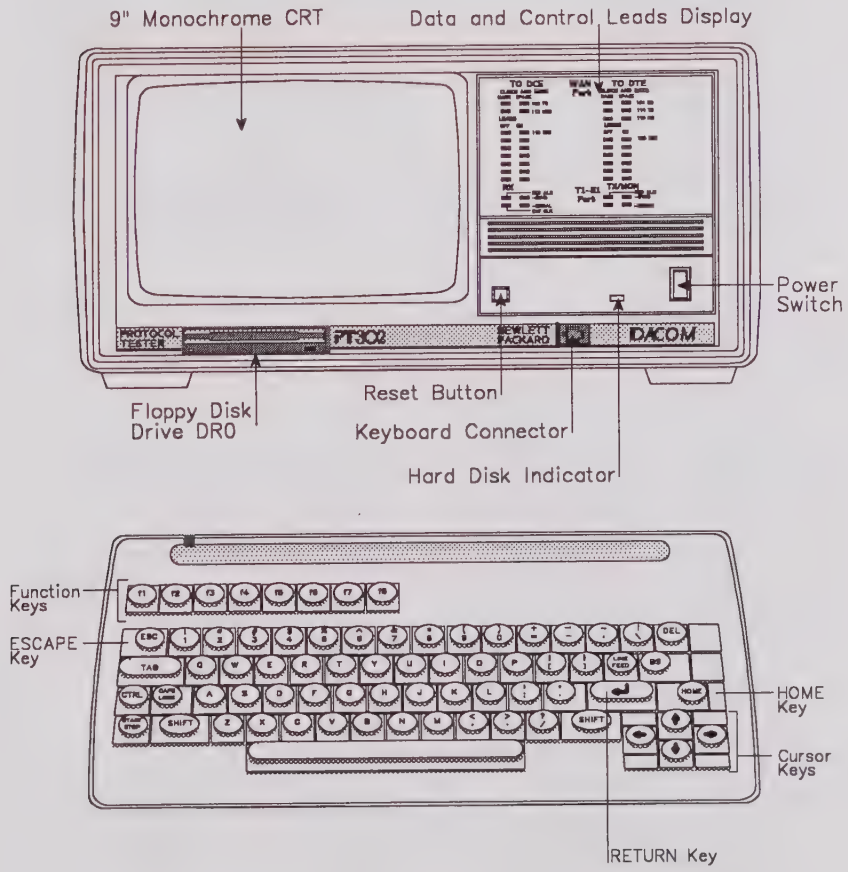


Figure 1-1 PT302 Front View

Floppy disk drive
One 3.5 inch drive, named DR0, uses 3.5 inch double sided, double density floppy disks. Each disk provides storage of up to 800 Kilobytes for Operating System, application, test script, and data files. Model C testers use high density floppy disks. Each disk provides storage of up to 1.4 Mbytes. Disks must be initialized in PT format. The floppy disk activity indicator glows red when the floppy disk is accessed.

Hard disk drive
The hard disk provides storage of up to 80 Mbytes for Operating System, application, test script, and data files. Model C tester provide storage of up to 245 Mbytes on a SCSI hard drive. The hard disk can be divided into up to 8 partitions of user-defined size. These partitions are named WD0 through WD7. The hard disk activity indicator glows red when the hard disk is accessed.

LED panel
Some WAN and T1-E1 layer 1 events are shown on the PT302 LED panel. Green - ON or SPACE; red - OFF or MARK condition.

RESET button
Press RESET or turn the tester off and then on again to reboot the tester. All the software is unloaded and the Operating System and Home menu will be reloaded.

HOME key
Press this key to return to the HOME processor.

ESC key
Press this key to enter and exit command mode.

START/STOP key
Press this key to start and stop scrolling of displayed captured data in protocol applications. Refer to the protocol-specific user manual for more information.

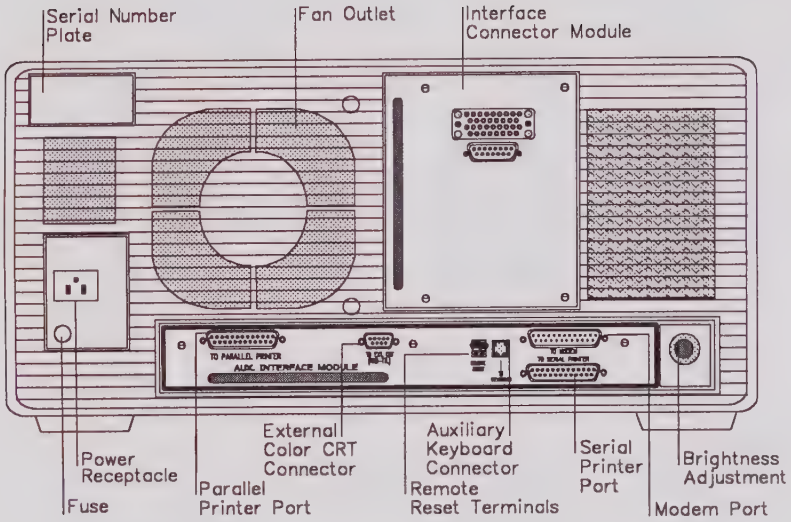


Figure 1-2 PT302 Back View

Interface connector module

The PT302 is available in several configurations, identified by the interface connector module at the back of the tester. Connectors are available to connect to one of the following interfaces:

- WAN
- T1 or WAN
- E1 or WAN

Parallel or serial printer port
The printer port can be connected to an external printer to print data files, test scripts, or screens. The parallel printer port is wired according to the standard PC output configuration. The serial output is standard RS-232. The tester output functions like Data Communications Equipment (DCE) - null modems are not required.

Modem (remote) port
The modem port can be used to control the tester in remote mode. The output is standard RS-232 serial; the output is configured as Data Terminal Equipment (DTE).

External color CRT (RGB-TTL)
The external color CRT connector is used to connect to an external monitor; a multisync monitor is recommended.

Auxiliary Keyboard Connector
This connector is for PT/RTA keyboards only, but is normally used only in an RTA configuration. It allows you to connect a keyboard directly to the RTA unit. For the PTs, it is a parallel extension of the keyboard connector on the front panel; however, only one keyboard can be connected to the tester at one time.

Remote Reset Terminals
These connections allow you to remotely initiate a logic level reset that causes a hardware reset and reboot. To reboot the tester, close the circuit for at least one second.

Fuse
Replace fuse with one of the correct rating. Do not use wire, short out the fuse holder, or improvise the fuse. Turn off power before replacing the fuse.

120V:
6A/125V
5x20 mm M

240V:
3.15A/250V
5x20 mm M

The PT502 - At a Glance

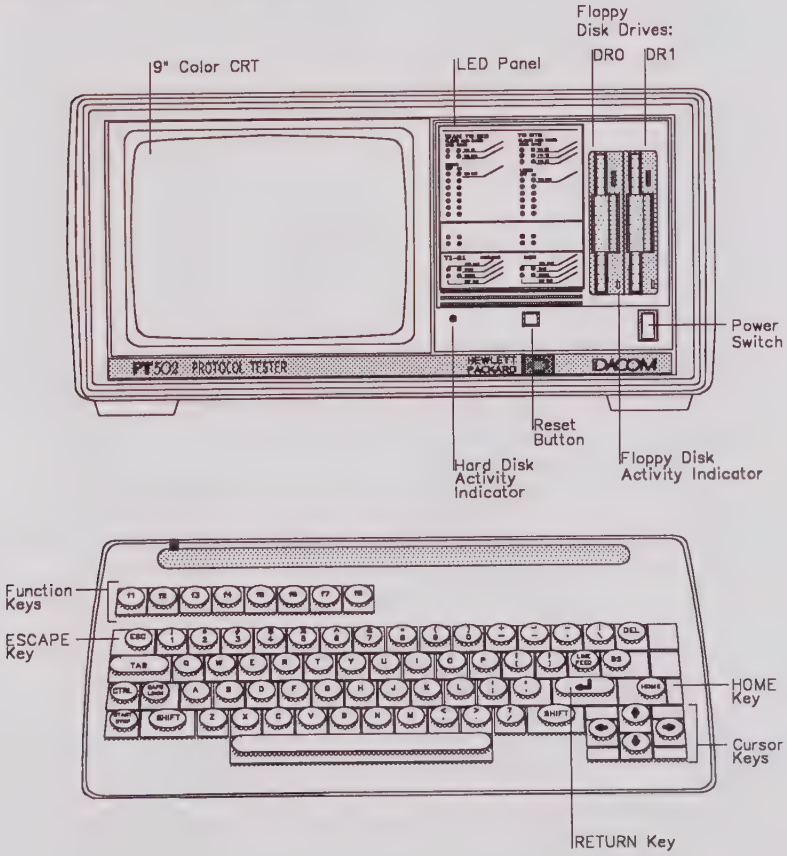


Figure 1-3 PT502 Front View

Floppy disk drives
Two 3.5 inch drives, named DR0 and DR1, use 3.5 inch double sided, double density floppy disks. Each disk provides storage of up to 800 Kilobytes for Operating System, application, test script, and data files. Model C testers use high density floppy disks. Each disk provides storage of up to 1.4 Mbytes. Disks must be initialized in PT format. The floppy disk activity indicator glows red when the floppy disk is accessed.

Hard disk drive
The hard disk provides storage of up to 80 Mbytes for Operating System, application, test script, and data files. Model C testers provide storage of up to 245 Mbytes on a SCSI hard drive. The hard disk can be divided into up to 8 partitions of user-defined size. These partitions are named WD0 through WD7. The hard disk activity indicator glows red when the hard disk is accessed.

LED panel
Some WAN and T1-E1 layer 1 events are shown on the PT502 LED panel. Green - ON or SPACE; red - OFF or MARK condition.

For Dual WAN testing, the LED panel refers to the line connected to WAN Port 1 (the data decoded on application processor #1).

RESET button
Press RESET or turn the tester off and then on again to reboot the tester. All the software is unloaded and the Operating System and Home Menu will be reloaded.

HOME key
Press this key to return to the HOME processor.

ESC key
Press this key to enter and exit command mode.

START/STOP key
Press this key to start and stop scrolling of displayed captured data in protocol applications. Refer to the protocol-specific user manual for more information.

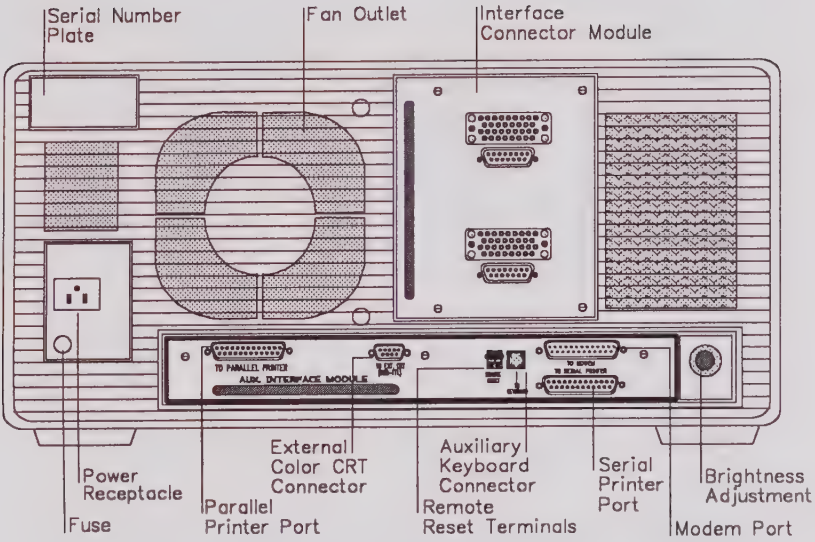


Figure 1-4 PT502 Back View

Interface connector module

The PT502 is available in several configurations, identified by the interface connector module at the back of the tester. Connectors are available to connect to one of the following interfaces:

- WAN
- Dual WAN
- T1 or WAN
- E1 or WAN
- Dual T1 or WAN and T1
- Dual E1 or WAN and E1

Parallel or serial printer port
The printer port can be connected to an external printer to print data files, test scripts, or screens. The parallel printer port is wired according to the standard PC output configuration. The serial output is standard RS-232. The tester output functions like a DCE - null modems are not required.

Modem (remote) port
The modem port can be used to control the tester in remote mode. The output is standard RS-232 serial; the output is configured as a DTE.

External color CRT (RGB-TTL)
The external color CRT connector is used to connect to an external monitor; a multisync monitor is recommended.

Auxiliary Keyboard Connector
This connector is for PT/RTA keyboards only, but is normally used only in an RTA configuration. It allows you to connect a keyboard directly to the RTA unit. For the PTs, it is a parallel extension of the keyboard connector on the front panel; however, only one keyboard can be connected to the tester at one time.

Remote Reset Terminals
These connections allow you to remotely initiate a logic level reset that causes a hardware reset and reboot. To reboot the tester, close the circuit for at least one second.

Fuse
Replace fuse with one of the correct rating. Do not use wire, short out the fuse holder, or improvise the fuse. Turn off power before replacing the fuse.

120 V:
6A/125V
5x20 mm M

240 V
3.15A/250V
5x20 mm M

Internal Architecture

The PT302/PT502 consists of up to five processors: the HOME processor and, depending on the machine type, from one to four application processors. Each application processor is dedicated to monitoring or emulating a single data stream; the HOME processor provides peripheral setup and utility functions. The display and keyboard are controlled by a single processor; initially it is the HOME processor.

The HOME Processor

The Home Menu software is loaded on the HOME processor and is used to:

- configure the physical interfaces for T1 or E1 data lines
- load a protocol application on an independent application processor
- manage disk and file utilities
- configure the printer and modem ports
- change the date and time
- transfer files to a personal computer or workstation

Application Processors

Application processors (APs) are specialized processing units for serial data communications protocols. To monitor or emulate a communications protocol, you must load an application on an AP to connect the data stream from the WAN or T1-E1 port.

With a T1-WAN or E1-WAN machine type, you can test either a T1-E1 or WAN data stream, but not both at the same time. With a Dual WAN or Dual T1-E1-WAN machine type, you can test two data streams simultaneously.

The following functions are handled by each AP:

- configuring the interface (WAN only)
- decoding and displaying protocol data
- capturing data to RAM
- recording data to a disk file
- executing customized test scripts

Each AP has its own capture RAM buffer. Both APs can simultaneously record to disk; data is merged chronologically into a single disk file.

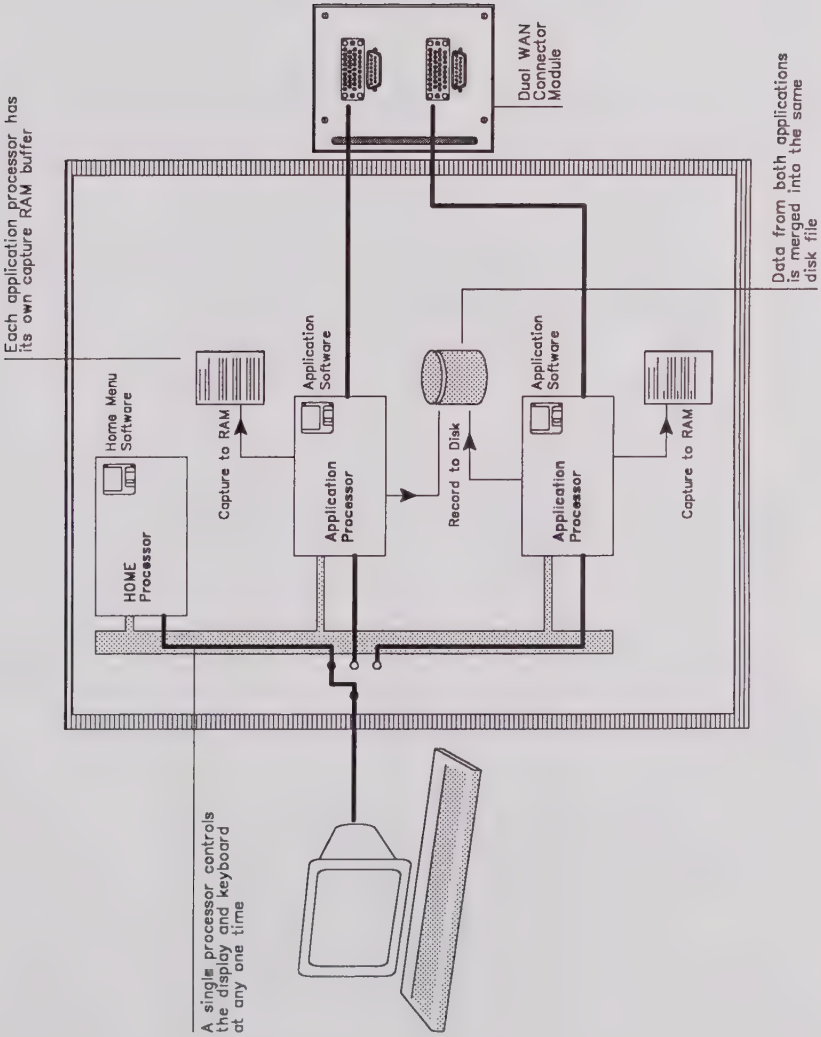

Each application processor has its own capture RAM buffer
Dual WAN Connector Module
Data from both applications is merged into the same disk file
Home Menu Software
HOME Processor
Capture to RAM
Application Software
Application Processor
Record to Disk
Application Software
Application Processor
Capture to RAM
A single processor controls the display and keyboard at any one time

Figure 1-5 Internal Architecture

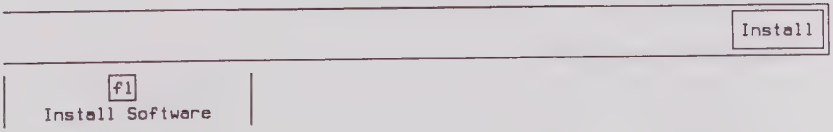
Software

When the PT302/PT502 is initially shipped, the Operating System, Home Menu, and any application software you ordered are factory installed on the hard disk. In addition, software is included on floppy disks to use as a backup. Although you can load applications from floppy disks, we recommend that you install them on hard disk since files load faster than from floppy disks.

A utility has been added to automate the software installation process. Install files, which contains protocol-specific information necessary for the installation process, are located on each PT302/PT502 application disk. Only application files relevant to your hardware configuration will be installed. Detailed software-specific installation instructions are documented in the respective product release notices.

To Install Software

1. Insert one of the backup floppy disks in DR0.
2. On the HOME processor, move the topic box to the **Install** topic.
3. Press function key f1 - *Install Software*.
4. Follow the instructions on the screen.



Contact your local HP representative for information on available software packages.

2
Getting Started

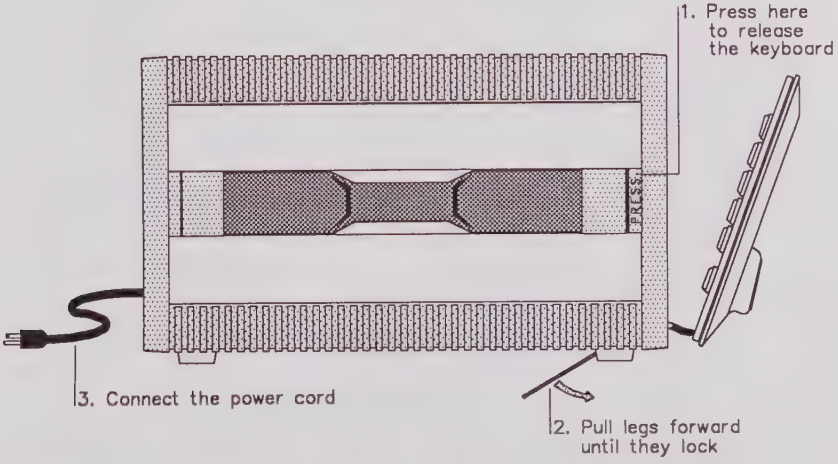
In This Chapter

- *Module 1: Setting up the Tester*
- *Module 2: Powering up the Tester*
- *Module 3: Selecting a Topic From the Topic Bar*
- *Module 4: Understanding Function Keys*
- *Module 5: Using Prompts*
- *Module 6: Using Menus*
- *Module 7: Setting the Time and Date*
- *Module 8: Powering Down the Tester*
- *Problems?*

The sections in this chapter describe how to power up the tester, the basic user interface functions, and how to power down the tester. If you are already familiar with these concepts, turn to chapter 3 to start testing at a WAN interface or chapter 4 to start testing at a T1-E1 interface.

Module 1: Setting up the Tester

1. Press the two buttons on the sides of the tester to remove the keyboard. The keyboard is not hinged to the housing and will drop forward.
2. Unfold the front legs by pulling them forward until they lock.
3. Connect the power cord to the power receptacle at the back of the unit.



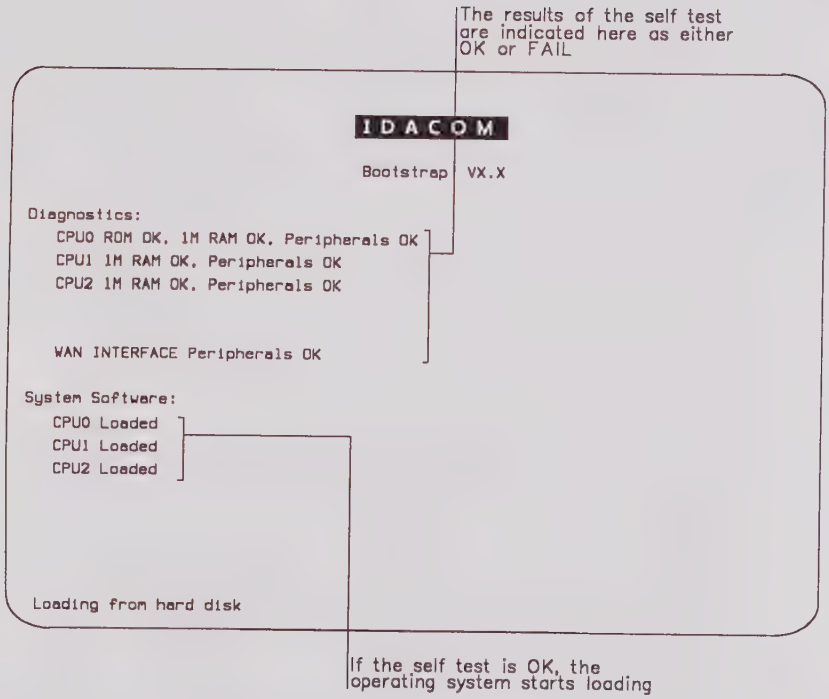
Module 2: Powering up the Tester

The PT302/PT502 runs a self test to verify the correct operation of its hardware components. This procedure takes about 30 seconds. If the self test passes, the Operating System software starts loading from hard disk. After the Operating System is loaded, the Home Menu software, along with three other files 'HOME.D0, APPL_CONF1.F, and APPL_CONF2.F' automatically load from hard disk. HOME.D0 configures the printer and modem ports. This file can be customized; refer to the Programmer's Reference Manual for more information. The APPL_CONF files determine which applications are available for your machine type.

NOTE
Home Menu software contains its own unique HOME.D0 file. Do not copy a HOME.D0 file from a non-RTP machine to an RTP machine or vice versa.

To Power Up the Tester

1. Turn on the power switch on the front of the unit; the self test automatically starts running. If the self test passes, the Operating System starts loading.


The results of the self test are indicated here as either OK or FAIL
IDACOM
Bootstrap VX.X
Diagnostics:
CPU0 ROM OK, 1M RAM OK, Peripherals OK
CPU1 1M RAM OK, Peripherals OK
CPU2 1M RAM OK, Peripherals OK
WAN INTERFACE Peripherals OK
System Software:
CPU0 Loaded
CPU1 Loaded
CPU2 Loaded
Loading from hard disk
If the self test is OK, the operating system starts loading

2. The IDACOM logo is displayed and the Home Menu software starts loading.

Initially, the HOME processor controls the display and keyboard. The topic box is positioned at the **WAN-Port** topic (or **WAN-Port1** for a Dual WAN machine type) and the background display is the Configuration Diagram. The Configuration Diagram is a graphical representation of the current status of the PT302/PT502. Refer to the chapter 9 'Checking the Status of the PT302/PT502' for more information.

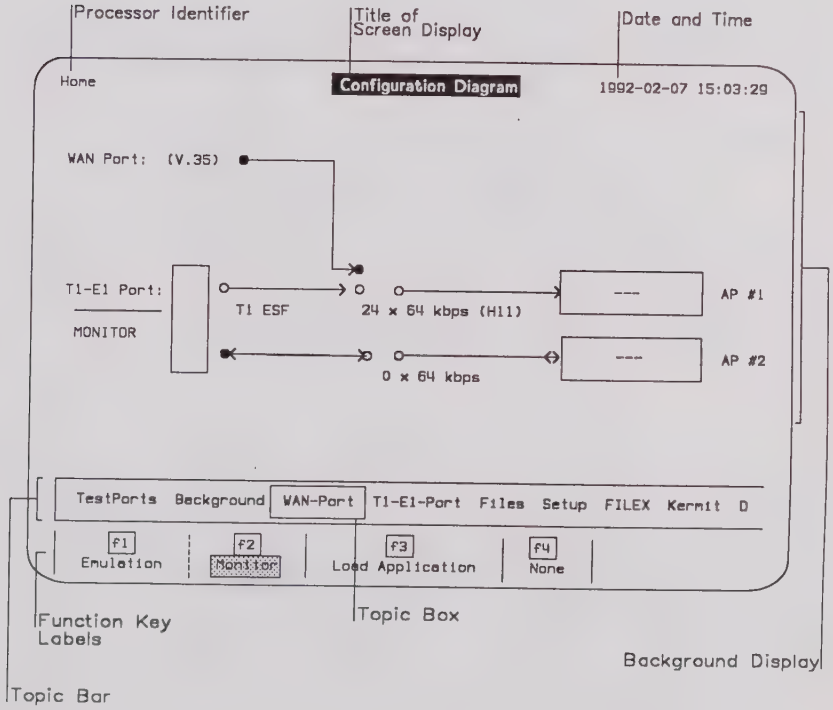
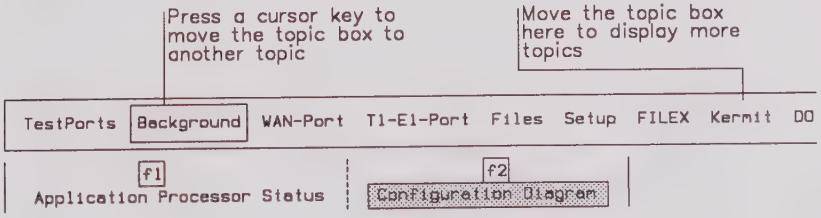


Figure 2-1 User Interface Components

Module 3: Selecting a Topic From the Topic Bar

All functions available on a processor are grouped under topics listed on the topic bar. The topic box indicates the current topic; function key labels are unique to the current topic.

If there are more topics than can be displayed at one time, the end of the topic bar is open. Additional topics scroll onto the topic bar when the topic box is moved to the last visible topic.



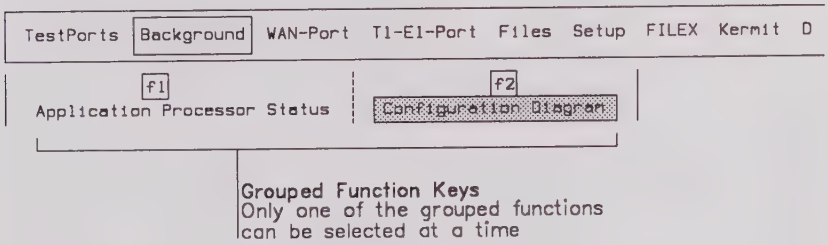
- To move to another topic, press the → or ← cursor key.
- To move to the first or last topic, press and hold down the CTRL key along with the → or ← cursor key.
- To quickly move to a topic, type the first letter of the desired topic. The topic box moves to the next topic that starts with that letter.

Module 4: Understanding Function Keys

The function key labels at the bottom of the screen correspond to function keys f1 through f8 on the keyboard. These function keys are used to assign values or to perform an action.

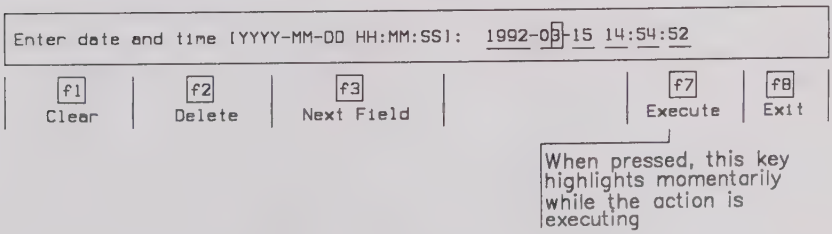
Grouped Function Keys

When only one of several related functions can be selected, a dotted line is used to separate the function key labels. The current selection is highlighted in blue.



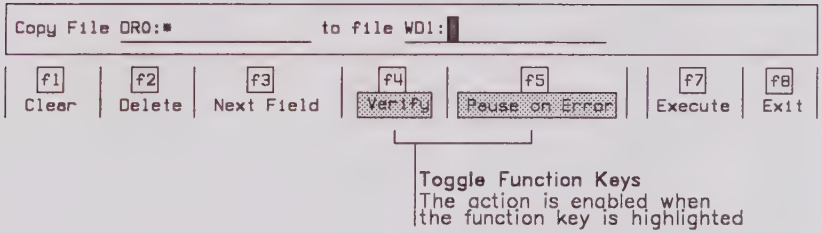
Action Function Keys

This type of function key is highlighted in blue while the action is executing.



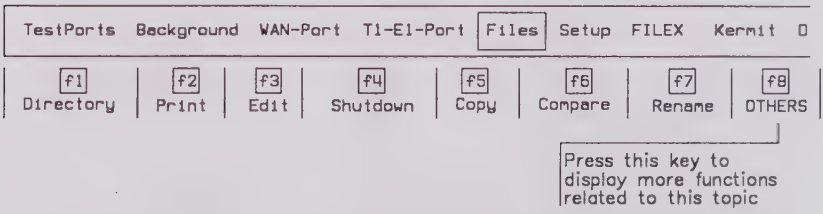
Toggle Function Keys

Toggle function keys are highlighted in blue when the action is enabled. To disable the action, press the key again; highlighting is turned off.



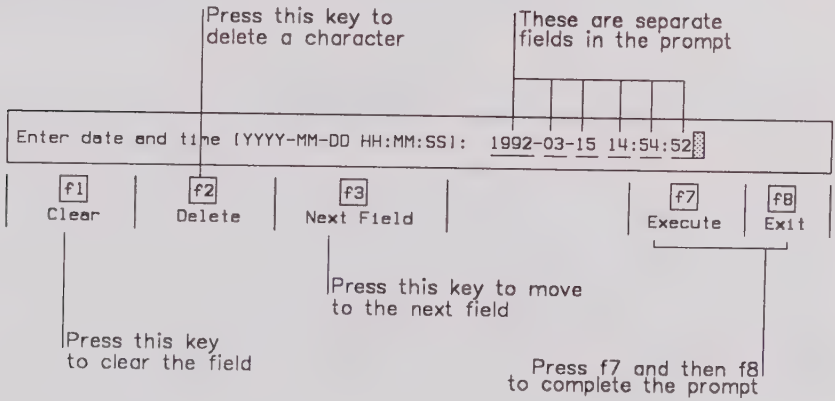
The OTHERS Function Key

When there are more function key labels than can be displayed on the screen at one time, a function key labelled OTHERS is displayed.



Module 5: Using Prompts

Prompts are used to specify values or strings other than those shown on function keys. Some prompts contain more than one field that must be specified. Initially, the cursor is positioned at the end of the first field. The following picture illustrates the common function keys associated with a prompt. The function keys may vary depending on the type of prompt.


Press this key to delete a character
These are separate fields in the prompt
Enter date and time [YYYY-MM-DD HH:MM:SS]: 1992-03-15 14:54:52
f1 Clear
f2 Delete
f3 Next Field
f7 Execute
f8 Exit
Press this key to move to the next field
Press this key to clear the field
Press f7 and then f8 to complete the prompt

To Move to Another Field

- Press the '*Next Field*' function key.
  or
- Press the → or ← cursor key.

To Clear a Field

1. Move the cursor to the desired field.
2. Press the '*Clear*' function key.

To Delete a Character From a Prompt Field

1. Move the cursor to the desired field.
2. Press the → or ← cursor key to move to the desired character.
3. Press the '*Delete*' function key.

To Execute the Action

There are two different ways to execute the action of the prompt. After you have entered all the text:

1. Press function key f7 - *Execute*; the prompt action is executed and the prompt remains displayed.
2. Press function key f8 - *Exit* to leave the prompt. If this key is pressed before *Execute*, the action is not executed and the prompt is exited.

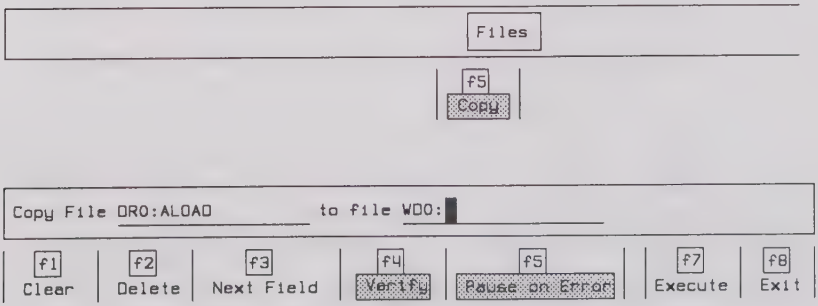
or

1. Position the cursor to the last field in the prompt.
2. Press RETURN; this combines the actions of *Execute* and *Exit*.

Example:

Copy the file named 'ALOAD' from floppy drive DR0 to hard disk partition WD0.

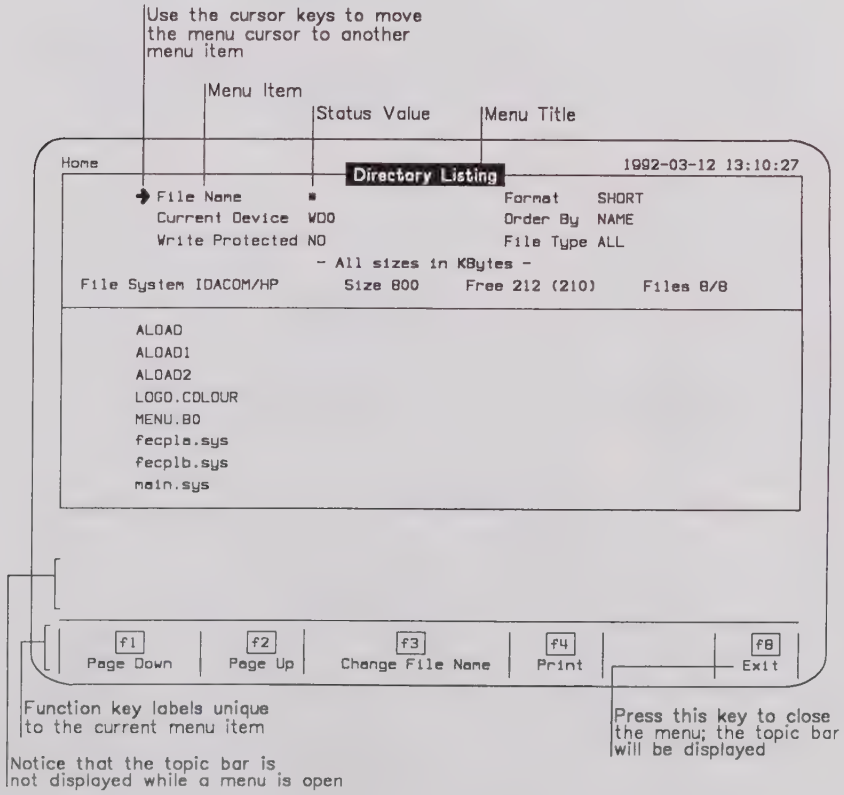
1. Move the topic box to the **Files** topic.
2. Press function key f5 - *Copy*.
3. Clear the first field (Copy file) and type: `DR0:ALOAD`.
4. Move to the second field (to file).
5. Clear this field and type: `WD0:`.
6. Press RETURN.



Module 6: Using Menus

Menus can be accessed either from the topic bar or from a previous menu to display additional selections. Once a menu is displayed, the topic bar is hidden. As you move the cursor to each menu item, a unique set of function keys is displayed to modify the current status value.

The Directory Listing menu is shown here to illustrate the use of menus. Refer to chapter 6 'Managing Your Files' for more information about listing a directory.



To Modify the Status Value

Some menu items are dependent on the current values of other items. A dash (---) in the status value field indicates that this menu item is not relevant in the current configuration and the value cannot be modified.

1. Move the cursor to the desired item on the menu.
2. Press the corresponding function key to:
   - select one of the listed status values;
   - specify a value or string in a prompt; or
   - display another selection menu.

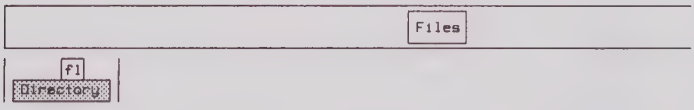
To Exit the Menu

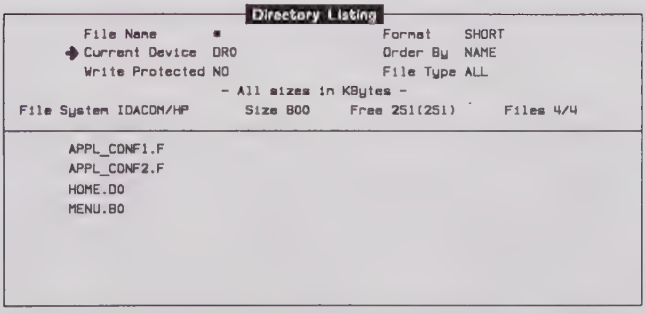
Press function key f8 - *Exit* to return to the topic bar or return to the previous menu.

Example:

Insert a disk in floppy drive DR0 and list its files.

1. Move the topic box to the **Files** topic.
2. Press function key f1 - *Directory* to display the Directory Listing menu.
3. Move the cursor to *Current Device*.
4. Press function key f3 - *DR0*.



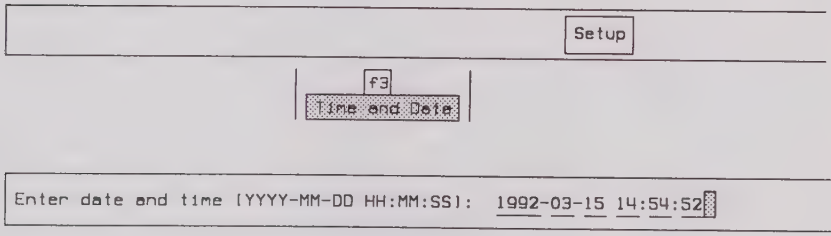


Module 7: Setting the Time and Date

The time and date are set to mountain standard time (MST) at the factory prior to shipping. This setting, located at the top right of the screen, can be modified to match your time zone.

To Set the Time and Date

1. Move the topic box to the **Setup** topic.
2. Press function key f3 - *Time and Date* to enter the prompt.
3. Move the cursor to each of the fields for the date (year/month/day) and time (hour/minute/second) and enter the desired values.
4. At the last field in the prompt, press RETURN to execute the action and exit the prompt.

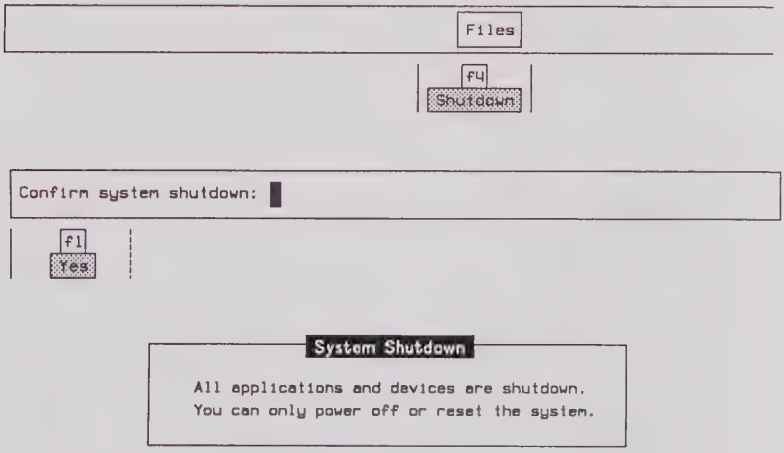


Module 8: Powering Down the Tester

Any time the tester is powered down, the head of the hard disk should be parked to prevent damage.

To Park the Hard Disk

1. Move the topic box to the **Files** topic.
2. Press function key f4 - *Shutdown.*
3. Press function key f1 - *Yes*; a notice is displayed which confirms system shutdown.



To Power Down the Tester

1. Remove disks from floppy drives to prevent damage.
2. Turn off the power switch on the front of the unit.

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DOS-Files

User Manual

Home Menu Version: 3.1
Part Number: 5961-7530

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Hewlett-Packard
IDACOM Telecommunications Operation

PREFACE

This manual is intended to provide a quick and easy-to-use instruction guide to the basic operation of DOS-Files, which is part of the PT Home Menu.

This manual is not intended to provide information concerning protocol specifications, nor is it intended as a programmer's manual.

The information contained in this document is subject to change without notice.

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1. INTRODUCTION

DOS-Files, part of the PT Home Menu, provides direct file exchange capability between IDACOM testers and MS-DOS® compatible microcomputers using 3.5 inch disks. This utility supports directory listings of either MS-DOS® or IDACOM format disks, copying files between the two formats, and deleting disk files from either of the two formats.

In order to access and operate an MS-DOS® disk correctly, the MS-DOS® disk must be formatted using the command: **format a: /f:720.**

The DOS floppy disk must be formatted as:

- double density
- 720 Kbytes

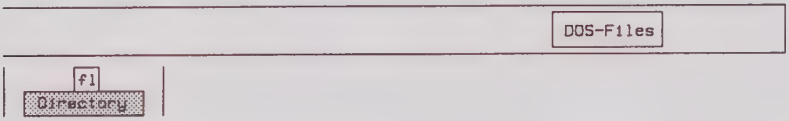
The DOS floppy disk:

- must not have a named file system;
- have only a root directory on the floppy disk; and
- cannot have more than 111 files, regardless of the amount of free space remaining on the disk.

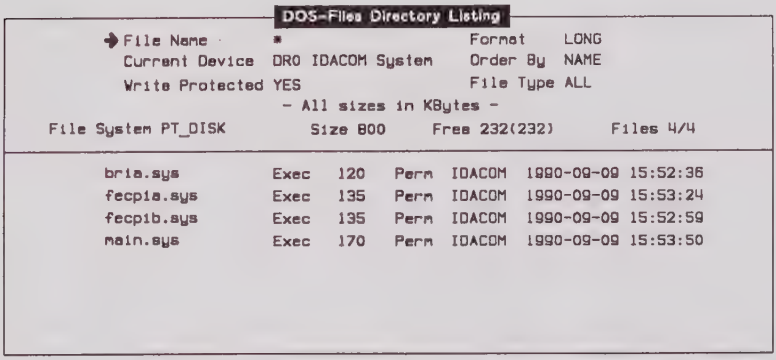
MS-DOS® is a US registered trademark of Microsoft Corporation.

2. LISTING A DIRECTORY

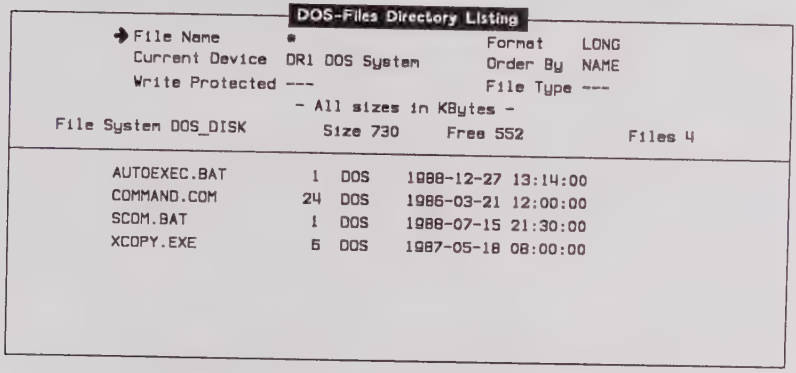
Directory listings of hard drive partitions or floppy disks can be displayed. disks can be either IDACOM or MS-DOS® format.



The directory of the current device is displayed. The directory format of an IDACOM format disk or hard drive partition is as follows:


DOS-Files Directory Listing
File Name *
Format LONG
Current Device DR0 IDACOM System
Order By NAME
Write Protected YES
File Type ALL
- All sizes in KBytes -
File System PT_DISK
Size 800
Free 232(232)
Files 4/4
bria.sys Exec 120 Perm IDACOM 1990-09-09 15:52:36
fecpia.sys Exec 135 Perm IDACOM 1990-09-09 15:53:24
fecpib.sys Exec 135 Perm IDACOM 1990-09-09 15:52:59
main.sys Exec 170 Perm IDACOM 1990-09-09 15:53:50

The directory format of an MS-DOS® format disk is as follows:



NOTE

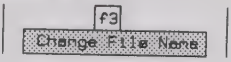
For an MS-DOS® disk, only files in the root directory are displayed; directory names and their files are not displayed.

→ *File Name*
Specifies the filename to match. If the filename is specified as * (wildcard character), all filenames will be matched.

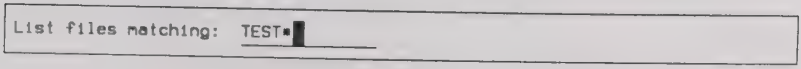
NOTE

If the filename is specified as *.*, only the files containing a period will be matched.

Example:
List the files starting with the word 'TEST'.



- Enter the filename (TEST*) and press ↵ (RETURN).



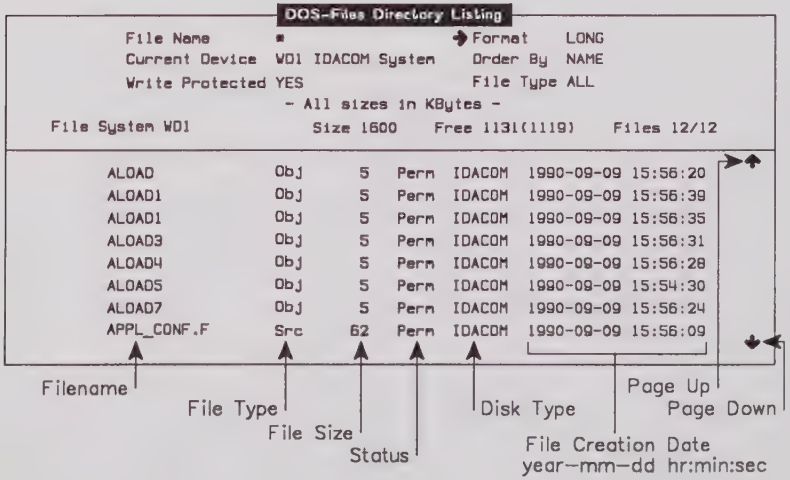
→ *Current Device*
The directory listing corresponds to the currently selected device. MS-DOS® disks can be accessed only through floppy disk drives DR0 and DR1.

Current Device also displays 'IDACOM System' or 'DOS System' to identify the appropriate format.

→ *Write Protected*
Selects whether the disk is software write protected (i.e. no data can be recorded or files saved to it). This item is not available for MS-DOS® disks; however, by using the write protect tab on the actual disk, a user can still write protect the disk.

→ *Format*

SHORT (default)	Displays only the filename.
LONG	Displays the filename, file type, size, status, disk type, and creation date. File type and status are not available for MS-DOS® disks.



→ *Order By*

NAME (default)	Lists files in alphabetical order.
SIZE	Lists files starting with the smallest to the largest.
DATE	Lists files starting with the oldest date.
TYPE	Lists system files (Exec) first, then object, source, and data files. This option is not available for MS-DOS® disks.

→ *File Type*

ALL (default)	Lists all files.
SRC	Lists only source code files. (A source file is a PT file type which can only be executed by the PT).
TEXT	Lists only text files (ASCII text).
DATA	Lists only data files.
OBJ	Lists only object code files.

NOTE

This is only available for IDACOM format disks.

File System <name>

This name is set by the user during the initialization of the device.

Size

The total space available on this device (in Kbytes).

NOTE

The hard disk is partitioned during initialization and is divided into a number of segments, or partitions. The size of each segment is defined at the time of initialization.

Free
For an IDACOM disk (eg. 314/312), the first number represents the total available free space, and the second number represents the largest contiguous area of free space.

For an MS-DOS® disk (eg. 552), the number represents the total available free space.

Files
For an IDACOM disk (eg. 12/12), this is the number of files displayed vs. the total number of files in that directory.

For an MS-DOS® disk (eg. 4), this is the total number of files on the disk.

The user can move the cursor down into the portion of the screen listing the disk files.

→ *<file name>*

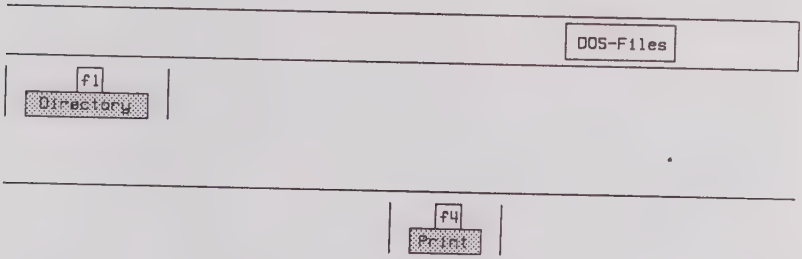
Edit File	Chooses the currently selected file to be edited. This item is not available for MS-DOS® disks. Refer to the 'General HOME Processor Topics' section in the basic User Manual for more information
Delete File	Prompts the user to delete the currently selected file from disk.

NOTE
The type of directory listing presented is automatically determined from the type of disk in the drive.

3. PRINTING THE DIRECTORY LISTING

This function is only available for IDACOM format disks.

Before printing, connect a serial or parallel printer to the back of the tester and configure the printer as described in the 'General HOME Processor Topics' section in the basic User Manual.



4. COPYING A FILE

Source or text file types can be copied using the following procedure or via the COPY_FILE command (refer to Appendix A).

Three disk file copy operations are supported:

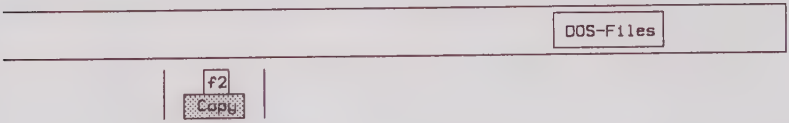
- IDACOM format to IDACOM format
- IDACOM format to MS-DOS® format
- MS-DOS® format to IDACOM format

NOTE

Source or text files can be copied between MS-DOS® and IDACOM formats. Copy operations from MS-DOS® to MS-DOS® format disks are not supported. Wildcard characters can be specified in the source filename for multiple file copying. If wildcard characters are used, the destination filename should be left unspecified, although a drive prefix must be specified.

Copying from an IDACOM Format Disk to an IDACOM Format Disk

Example:
Copy the IDACOM format disk file 'TEST1' on WD1 to the IDACOM format disk file 'TEST1' on DR0.



- Specify the device and filename for the first field (WD1:TEST1), then press the *Next Field* function key, specify the target device, and filename (DR0:TEST1).
- Press ↵ (RETURN) to start copying.

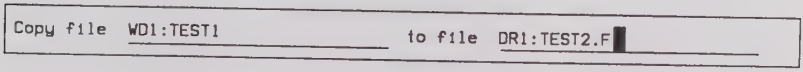
Copying from an IDACOM Format Disk to an MS-DOS® Format Disk

If an MS-DOS® format disk is specified as a destination, the filename must follow MS-DOS® naming conventions. The filename can be a maximum of eight characters, followed by a '.' character and a three character filename extension.

All lower case characters in the PT filename will be automatically converted to upper case when the file is copied to an MS-DOS® file. For example, if the user copies the file Home.d, the MS-DOS® file is renamed HOME.D.

Example:
Copy the IDACOM format disk file 'TEST1' on WD1 to the MS-DOS® format disk file 'TEST2.F' on DR1.

- Specify the device and filename for the first field (WD1:TEST1), then press the *Next Field* function key, specify the target device, and filename (DR1:TEST2.F). An MS-DOS® formatted disk must be in DR1.
- Press ↵ (RETURN) to start copying.



Copying from an MS-DOS® Format Disk to an IDACOM Format Disk

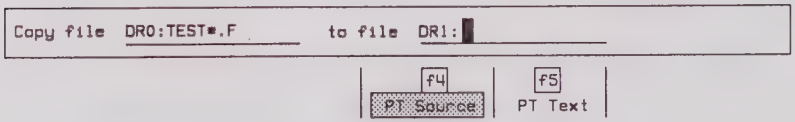
If the source filename contains a (*) wildcard character and the destination filename is unspecified, the files copied to the destination device will have the same filenames as the source filenames.

In order to copy all files, the user must enter a (*) wildcard character as a source file designator. If *.* is entered, only the files containing at least one period (.) are copied. Note that no more than 78 files can be copied. If you want to copy more than 78 files to the IDACOM format disk, first copy the MS-DOS® format disk to a PT hard drive partition, then copy it to the IDACOM format disk.

The type of copy operation is automatically determined from the type of disks in the specified devices.

Example:
Copy all the (source) files matching the filename 'TEST*.F' on the MS-DOS® format disk in DR0 to the IDACOM format disk in DR1 as PT Source files.

- Specify the device and filename for the first field (DR0:TEST*.F), then press the *Next Field* function key, and specify the target device (DR1:).
- Press function key f4 - *PT Source* to select the PT file as a source file (files must be designated as PT Source files or PT Text files when copying).
- Press ↵ (RETURN) to start copying.

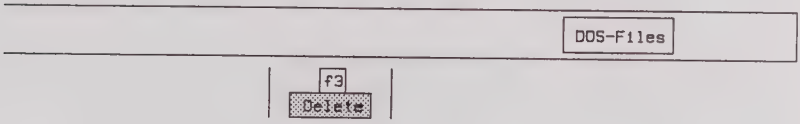


WARNING
Any files on the target disk matching the specified destination filename will be deleted and replaced with a copy of the specified source file. As the type of copy operation is automatically determined, it is advised to be as explicit as possible when naming the source and destination files, and always provide drive specifications.

5. DELETING A FILE

Files can be deleted using the following procedure or via the DELETE_FILE command. Refer to Appendix A.

Example:
Delete the file 'XYZ' located on the MS-DOS format disk in DR1.



- Specify the device and filename (DR1:XYZ) and press ↵ (RETURN).

NOTE
The wildcard characters cannot be used when deleting files. The type of delete operation is automatically determined from the type of disk in the specified device.

WARNING
As the type of delete operation is automatically determined, always provide a drive specification.

A. PROGRAMMING COMMANDS

Some Interactive Test Language (ITL) commands are provided for implementing DOS-Files application functions.

COPY_FILE (source name / destination name --)

Copies the specified source file into the specified destination file. Files can be copied between IDACOM format and MS-DOS® format disks.

Example 1:
Copy the IDACOM format disk file 'TEST1' on WD1 to the MS-DOS® disk file 'TEST2.F' on DR1. Enter the following on the command line.

```
" WD1:TEST1" " DR1:TEST2.F" COPY_FILE
```

Example 2:
Copy all the source files matching the filename 'TEST*.F' on the MS-DOS® format disk in DR0 to the IDACOM format disk in DR1. Enter the following on the command line.

```
" DR0:TEST*.F" " DR1:" COPY_FILE
```

DELETE_FILE (filename --)

Removes the specified file from the disk. The file can be on either an IDACOM or MS-DOS® format disk.

Example:
Delete the file 'XYZ' located on the MS-DOS® format disk in DR1. Enter the following on the command line.

```
" DR1:XYZ" DELETE_FILE
```

PT-DEST (file-type --)

Where: file-type = SRC_FILE (source file)
TEXT_FILE (ASCII text file)

Specifies the filetype created when copying a DOS file to a PT file. Ensure the correct file type is specified when copying; a source file can be mistakenly copied as a text file and vice versa.

DOS-Files User Manual

Home Menu Version: 3.1
Part Number: 5961-7530

Printed in Canada, April 1995

Hewlett-Packard
IDACOM Telecommunications Operation

Common Control User Manual

Version 3.0

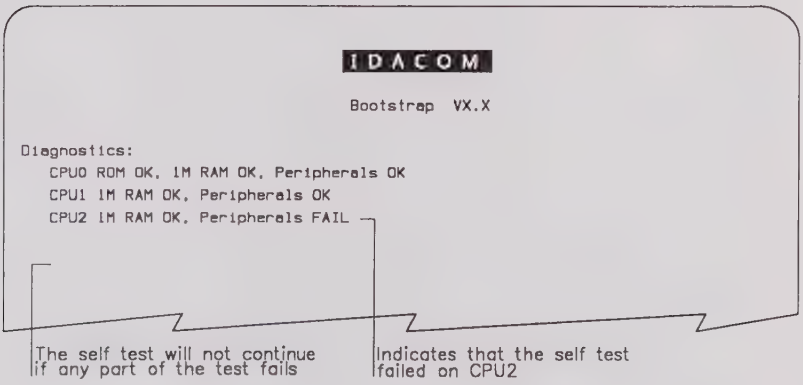
Part Number: 5961-7523

Printed in Canada, January 1994

Hewlett-Packard
IDACOM Telecommunications Operation

Problems?

If the Self Test Fails During Power Up


IDACOM
Bootstrap VX.X
Diagnostics:
CPU0 ROM OK, 1M RAM OK, Peripherals OK
CPU1 1M RAM OK, Peripherals OK
CPU2 1M RAM OK, Peripherals FAIL
The self test will not continue if any part of the test fails
Indicates that the self test failed on CPU2

To solve this problem:

- Press the RESET button for at least one second to repeat the self test.

If the problem persists, call your local support centre. The support representative might suggest to run Stand-Alone Utilities to isolate the problem.

If the Operating System Software Fails to Load

If the Operating System fails to load, there are two possible reasons:

- The system software files could not be found. The following message is displayed:

```
"Insert System diskette in Floppy Drive DR0"
```

- The system software files were located but could not be read. A message similar to the following is displayed, identifying the file that could not be loaded properly.

```
"CPU2 ERROR - Could not load file "fecp1b.sys""
```

To solve this problem:

1. Insert the **Auxiliary** Operating System disk in floppy drive DR0 and the **Main** Operating System disk in floppy drive DR1 (PT502 only) .
2. Press the RESET button for at least one second to reboot the PT.
3. If the software loads successfully, copy the contents of these disks to hard disk partition WD0. See the section 'Copying Files' on page 8-10.

NOTE
For the PT302, insert the Main Operating System and Application Support Libraries disk in floppy drive DR0.oc

NOTE
If you have a tester with two floppy drives and are experiencing trouble with one of them and the hard drive, insert the Floppy Drive Boot disk in the functional drive and press the reset button to reboot the tester. Follow the instructions on the screen.

If the IDACOM Logo is Not Displayed

If the Operating System loads successfully but the logo is not displayed, there are two possible reasons:

- ALOAD files are incompatible. The following message is displayed in the upper left corner of the screen:

  ```
  "Incompatible Version"
  ```

- ALOAD files are not found. The FIG-FORTH/IDACOM version and date and time are displayed on the top line of the screen.

To solve this problem:

1. Insert the **Auxiliary** Operating System disk in floppy drive DR0 and the **Main** Operating System disk in floppy drive DR1 (PT502 only).
2. Press the RESET button for at least one second to reboot the PT.
3. If the software loads successfully, copy all ALOAD files to hard disk partition WD0. See the section 'Copying Files' on page 8-10.

NOTE

If you have a tester with two floppy drives and are experiencing trouble with one of them and the hard drive, insert the Floppy Drive Boot disk in the functional drive and press the reset button to reboot the tester. Follow the instructions on the screen.

If the Home Menu Software Fails to Load

If the IDACOM logo is displayed but the Home Menu software is not loaded because the MENU.B0 file is not found or is an incompatible version, the following message is displayed.

```
"Software not loaded.
Insert Home Menu Disk in floppy drive.
Press ↵ to continue"
```

To solve this problem:

1. Insert the disk containing the latest version of the Home Menu software into floppy drive DR0.
2. Press RETURN to continue.
3. If the software loads successfully, copy the MENU.B0 file to WD0. See the section 'Copying Files' on page 6-10.

If the APPL_CONF Files Fail to Load

The APPL_CONF1.F and APPL_CONF2.F files determine which protocol applications are available for your machine type. If these files do not load, the following message is displayed:

```
"Cannot locate file APPL_CONF1.F.
Software not loaded.
Insert Home Menu Disk in floppy drive.
Press ↵ to continue"
```

To solve this problem:

1. Insert the disk containing the latest version of the Home Menu software into floppy drive DR0.
2. Press RETURN to continue.
3. If the software loads successfully, copy the APPL_CONF1.F and APPL_CONF2.F files to hard disk partition WD0. See the section 'Copying Files' on page 6-10.

If All Else Fails

Internationally:
Tel: (403) 439-2770
Fax: (403) 430-2600

In North America
Tel: 1-800-661-3868
Fax: (403) 462-4912

3
Testing at a WAN Interface

In This Chapter

- *Selecting the Interface Mode*
- *Loading an Application*
- *Problems?*

Three basic steps must be accomplished to start testing a communications protocol at a WAN interface:

1. Select monitor mode or emulation mode.
2. Connect the tester and DUT appropriately.
3. Load an application.

Once you have loaded the application, refer to the application user manual for protocol-specific information.

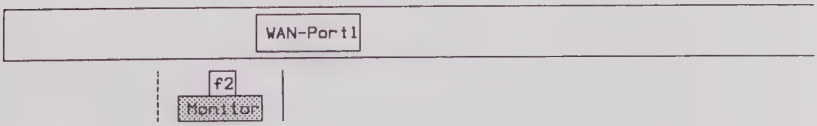
Selecting the Interface Mode

You can select either the monitor or emulation interface mode.

To Select Monitor Mode

In monitor mode, the PT302/PT502 can decode, display, and capture data sent between two devices.

1. Move the topic box to the appropriate topic:
   - **WAN-Port** (all WAN configurations but Dual WAN)
   - **WAN-Port1** or **WAN-Port2** (Dual WAN machine type)
2. Press function key f2 - *Monitor.*



To Physically Connect the Tester to Monitor

The following figures show how to connect the tester to the line, using the V.36 connectors on a WAN connector module.

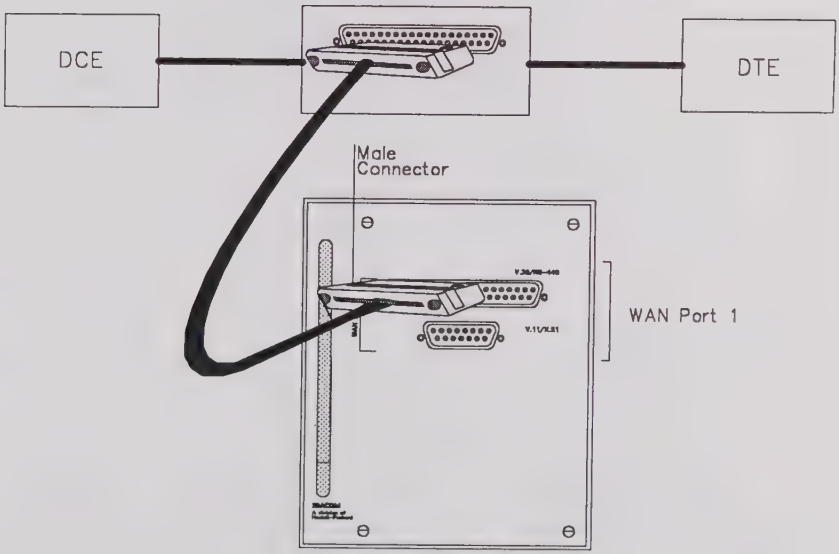


Figure 3-1 Monitoring at a WAN Interface

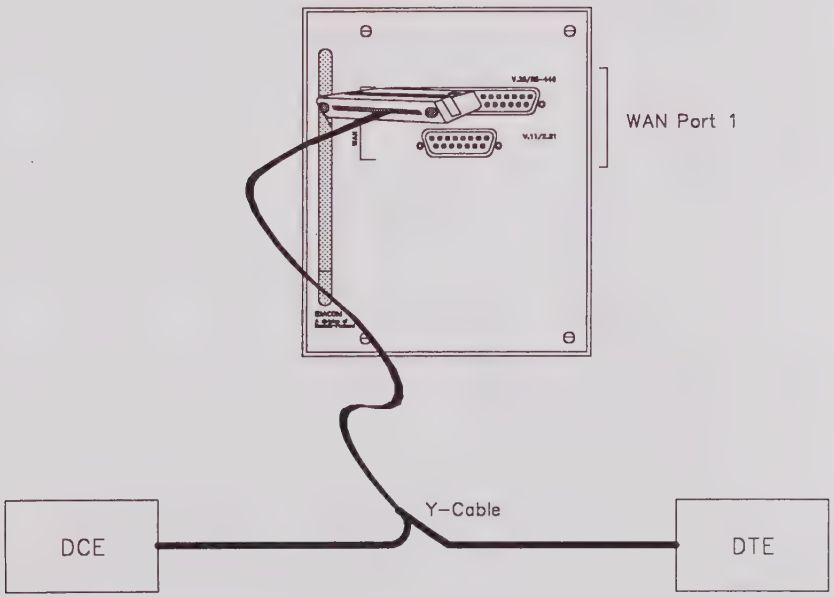
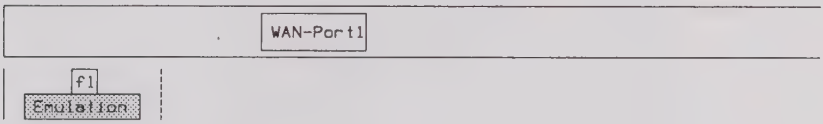


Figure 3-2 Monitoring at a WAN Interface

To Select Emulation Mode

The PT302/PT502 can emulate a protocol implementation. By default, the PT302/PT502 will provide correct protocol responses to received protocol data units automatically. This feature is explained in more detail in each protocol application user manual. You can send frames by pressing function keys, entering protocol-specific commands, or writing test programs to use the PT302/PT502 to simulate correct or incorrect protocol behavior.

1. Move the topic box to the appropriate topic:
   - **WAN-Port** (all WAN configurations but Dual WAN)
   - **WAN-Port1** or **WAN-Port2** (Dual WAN machine type)
2. Press function key f1 - *Emulation.*



To Physically Connect the Tester to Emulate

The following figures show how to connect to the V.36 connector and the V.11 connector on a WAN connector module.

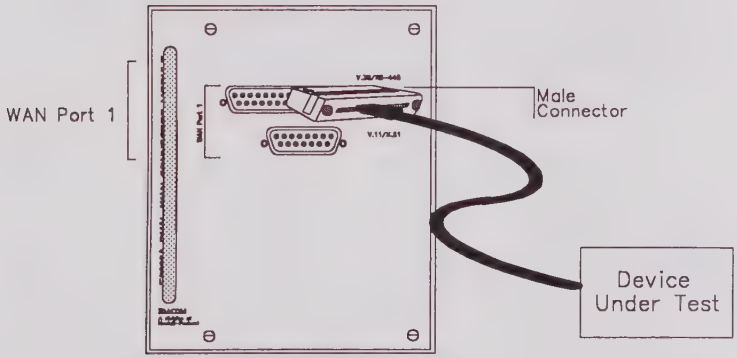


Figure 3-3 Emulating at a WAN Interface

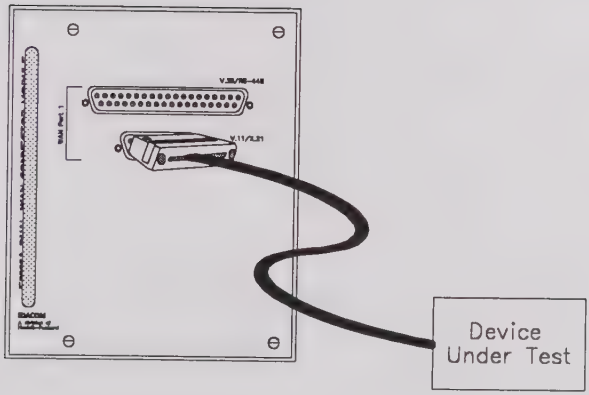


Figure 3-4 Emulating at a WAN Interface

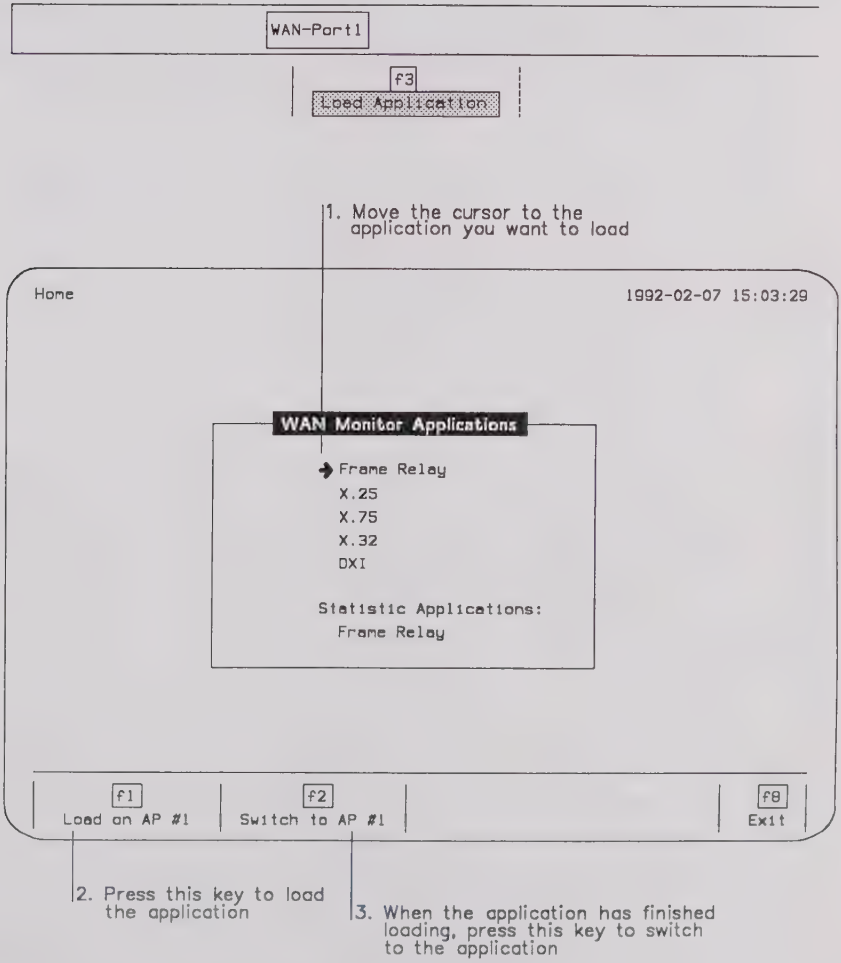
Loading an Application

To monitor or emulate a communications protocol, you must load an application on the application processor (AP) corresponding to the WAN port. Depending on whether you select monitor or emulation mode, either the WAN Monitor or the WAN Emulation Applications menu can be displayed with a list of available applications.

When the application has finished loading, you can switch to the application you have just loaded; protocol-specific application topics will be displayed.

To Load an Application

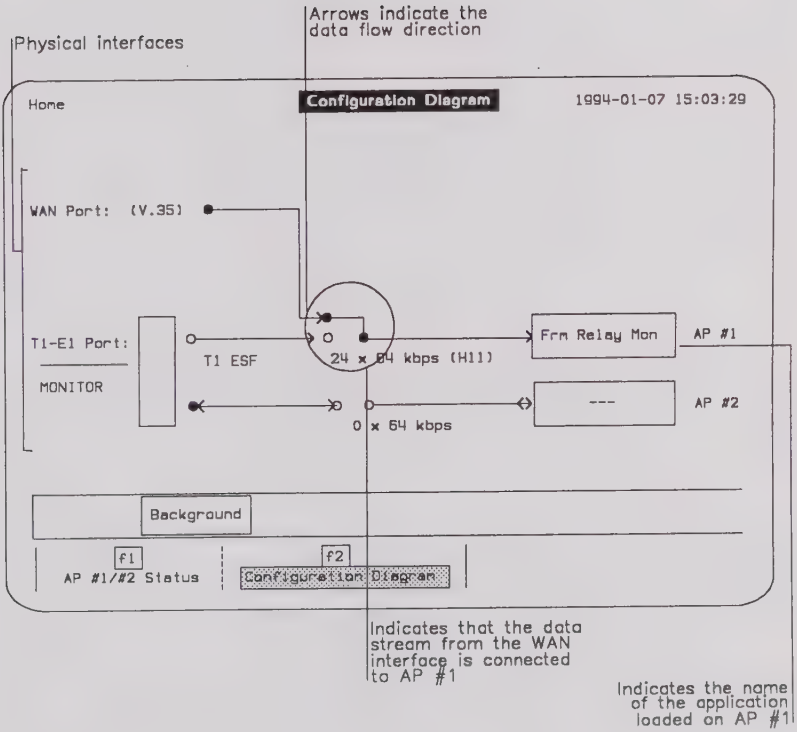
1. Move the topic box to the appropriate topic:
   - **WAN-Port** (all WAN configurations but Dual WAN)
   - **WAN-Port1** or **WAN-Port2** (Dual WAN machine type)
2. Press function key f3 - *Load Application.*
3. Move the cursor to the desired application on the WAN Monitor or the WAN Emulation Applications menu.
4. Press function key f1 - *Load on AP #1* (or *Load on AP #2* from **WAN-Port2**) and wait until the application has finished loading.
5. Press function key f2 - *Switch to AP #1* (or *Switch to AP #2* from **WAN-Port2**) to switch to the application.


WAN-Port1
f3
Load Application
1. Move the cursor to the application you want to load
Home
1992-02-07 15:03:29
WAN Monitor Applications
Frame Relay
X.25
X.75
X.32
DXI
Statistic Applications:
Frame Relay
f1
Load an AP #1
f2
Switch to AP #1
f8
Exit
2. Press this key to load the application
3. When the application has finished loading, press this key to switch to the application

To Check the Status of the WAN Port

Depending on the type of machine you have, the Configuration Diagram may not be displayed exactly as follows. The lines highlighted in green indicate an active path from the physical port to the application processor. Lines highlighted in white as on the PT502 (or unhighlighted as on the PT302) indicate possible paths that are not currently in use.

1. If you have already switched to an application, press the HOME key on the keyboard to return to the HOME processor. If a menu is still displayed, press function key f8 - *Exit* or the HOME key to close the menu and display the topic bar.
2. Move the topic box to the **Background** topic.
3. Press function key f2 - *Configuration Diagram*.


Physical interfaces
Arrows indicate the data flow direction
Home
Configuration Diagram
1994-01-07 15:03:29
WAN Port: (V.35)
T1-E1 Port:
MONITOR
T1 ESF
24 x 64 kbps (H11)
Frm Relay Mon
AP #1
0 x 64 kbps

AP #2
Background
f1
AP #1/#2 Status
f2
Configuration Diagram
Indicates that the data stream from the WAN interface is connected to AP #1
Indicates the name of the application loaded on AP #1

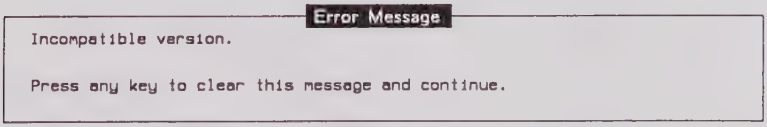
Problems?

If the Application Fails to Load

The application may fail to load for the following reasons:

- The application file does not exist. The following error message is displayed over the application loading menu:

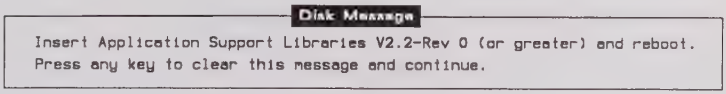
- The application file is an incompatible version. The following error message is displayed over the application loading menu:



To solve this problem:

1. Insert the disk containing the latest version of the application into floppy drive DR0.
2. Clear the message and load the application from floppy disk.
3. If the application loads successfully, replace the existing application software on the hard disk. See the section 'Copying Files' on page 6-10.

- The PT was booted using an incompatible version of the files from the Support Libraries disk. The following error message is displayed over the application loading menu:


Disk Message
Insert Application Support Libraries V2.2-Rev 0 (or greater) and reboot.
Press any key to clear this message and continue.

To solve this problem:

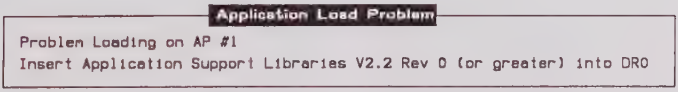
1. Insert the specified disk and reboot the PT.
2. Load the application again.
3. If the application loads successfully, install the Application Support Libraries software on hard disk partition WD0. Refer to the PT302 or the PT502 Product Release Notice for instructions to install this software on the hard disk.

- The application libraries files from the application disk cannot be located on the PT, or are an incompatible version, or are corrupted. For example, the following load problem message is displayed for X.25:

To solve this problem:

1. Insert the specified disk and press f1 to continue.
2. If the application loads successfully, install the existing application software on the hard disk. See the PT302/PT502 Product Release Notice for instructions to install the software on the hard disk.

- Files from the Application Support Libraries software cannot be located on the PT, or is an incompatible version, or is corrupted. The following application load problem message is displayed:



To solve this problem:

1. Insert the specified disk and press f1 to continue.
2. If the application loads successfully, install the Application Support Libraries software on hard disk partition WD0. See the PT302/PT502 Product Release Notice for instructions to install this software on the hard disk.

If an Application is Already Loaded on the Application Processor

Only one application at a time can be loaded on an application processor. If an application is already loaded on the application processor on which you are trying to load a second application, the following prompt will be displayed:

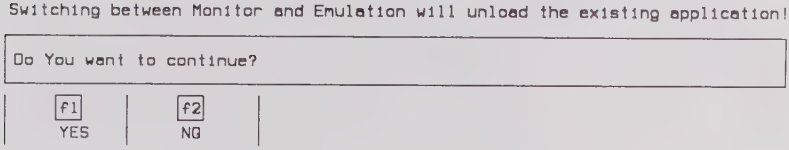
To solve this problem:

- Press function key f1 - *YES* to unload the previous application and to continue loading the new one.

  or
- Press function key f2 - *NO* to abort loading the new application.

If an Application is Loaded when you Switch the Interface Mode

If an application is already loaded when you switch interface mode between monitor and emulation, the following notice and prompt will be displayed:



To solve this problem:

- Press function key - *YES* to unload the application and switch to the new interface mode.
- Press function key - *NO* to abort the switching operation and keep the application loaded.

If All Else Fails

Internationally:
Tel: (403) 439-2770
Fax: (403) 430-2600

In North America
Tel: 1-800-661-3868
Fax: (403) 462-4912

4
Testing at a T1-E1 Interface

In This Chapter

- *Selecting the Monitor or Emulation Interface Mode*
- *Configuring the T1-E1 Port*
- *Assigning Timeslots*
- *Loading an Application*
- *Problems?*

Five basic steps must be accomplished to start testing a communications protocol at a T1-E1 interface:

1. Select monitor or emulation mode.
2. Connect the tester and DUT appropriately.
3. Configure the interface (eg. select the framing format and other interface parameters).
4. Assign the timeslots.
5. Load an application.

Once you have loaded the application, refer to the application user manual for protocol-specific information.

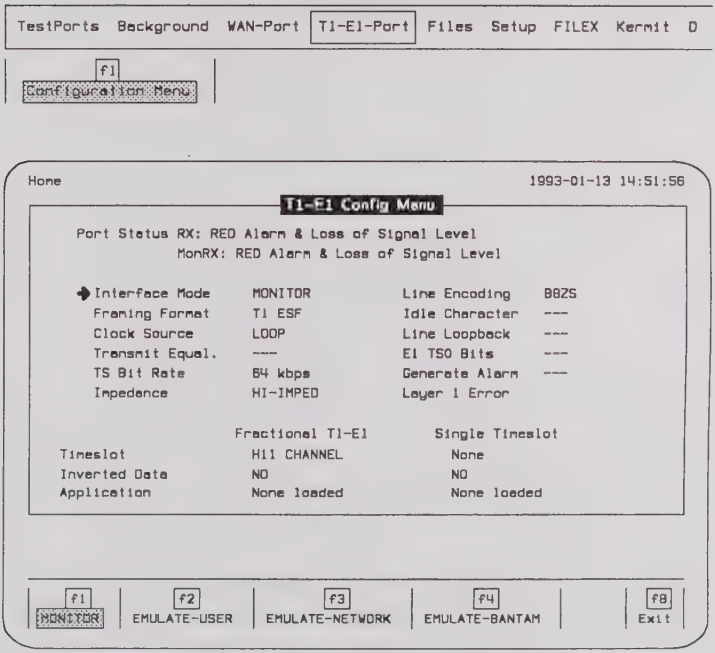
Selecting the Monitor or Emulation Interface Mode

You can select either the monitor or emulation interface mode (see Page 4-16 to set the emulation mode).

To Select Monitor Mode

In monitor mode, the PT302/PT502 can decode, display, and capture data exchanged between two communication devices.

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Interface Mode*.
4. Press function key f1 - *MONITOR*.


TestPorts Background WAN-Port T1-E1-Port Files Setup FILEX Kermit D
f1
Configuration Menu
Home
1993-01-13 14:51:56
T1-E1 Config Menu
Port Status RX: RED Alarm & Loss of Signal Level
MonRX: RED Alarm & Loss of Signal Level
Interface Mode MONITOR
Framing Format T1 ESF
Clock Source LOOP
Transmit Equal. ---
TS Bit Rate 64 kbps
Impedance HI-IMPED
Line Encoding B8ZS
Idle Character ---
Line Loopback ---
E1 TS0 Bits ---
Generate Alarm ---
Layer 1 Error
Fractional T1-E1
Single Timeslot
Timeslot
H11 CHANNEL
None
Inverted Data
NO
NO
Application
None loaded
None loaded
f1 MONITOR
f2 EMULATE-USER
f3 EMULATE-NETWORK
f4 EMULATE-BANTAM
f8 Exit

To Physically Connect the Tester to Monitor

This example applies only to T1-E1 units ordered with option #003.

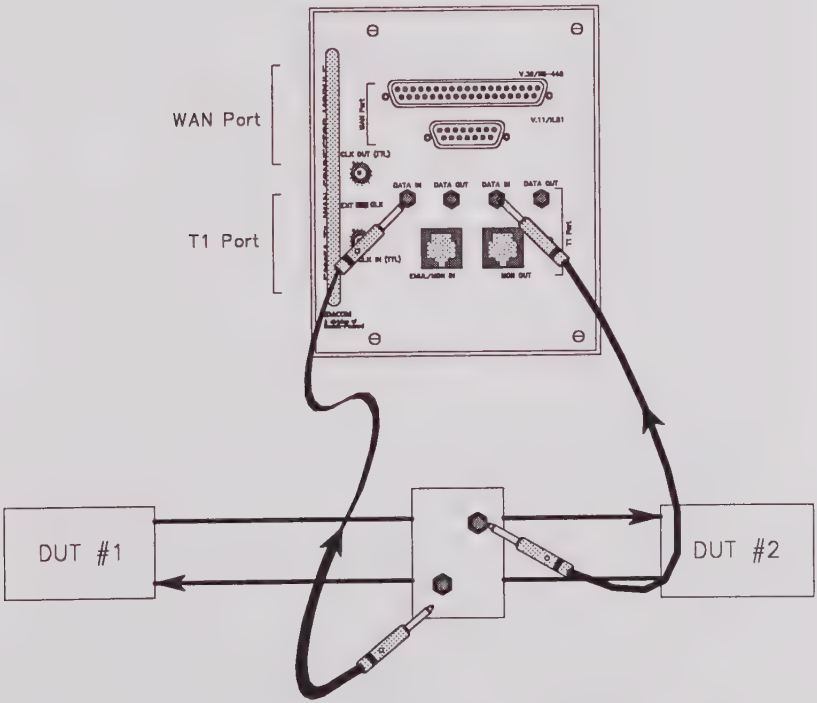


Figure 4-1 T-Tap Passive Monitoring (Bantam Jacks)

This example applies only to T1-E1 units ordered with option #012.

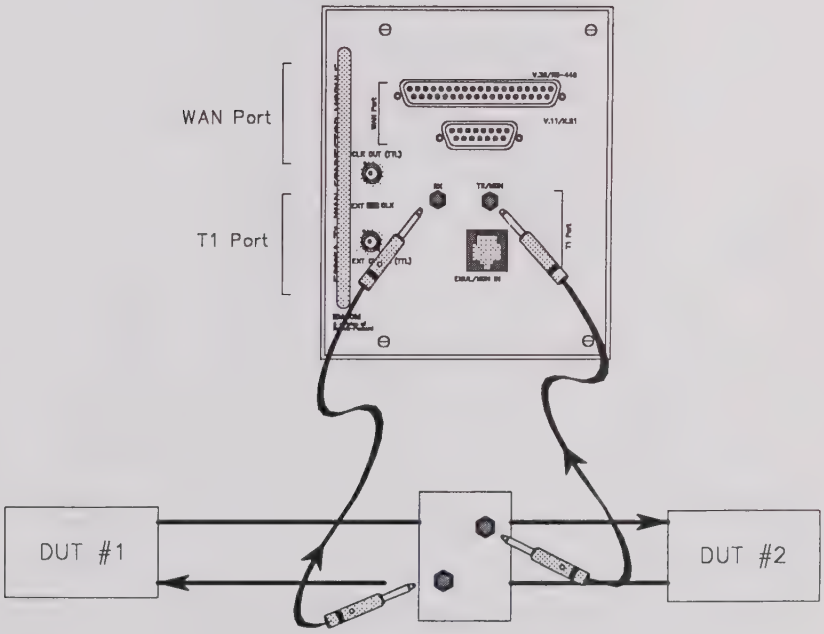


Figure 4-2 T-Tap Passive Monitoring (Bantam Jacks)

This example applies only to T1-E1 units ordered with option #003.

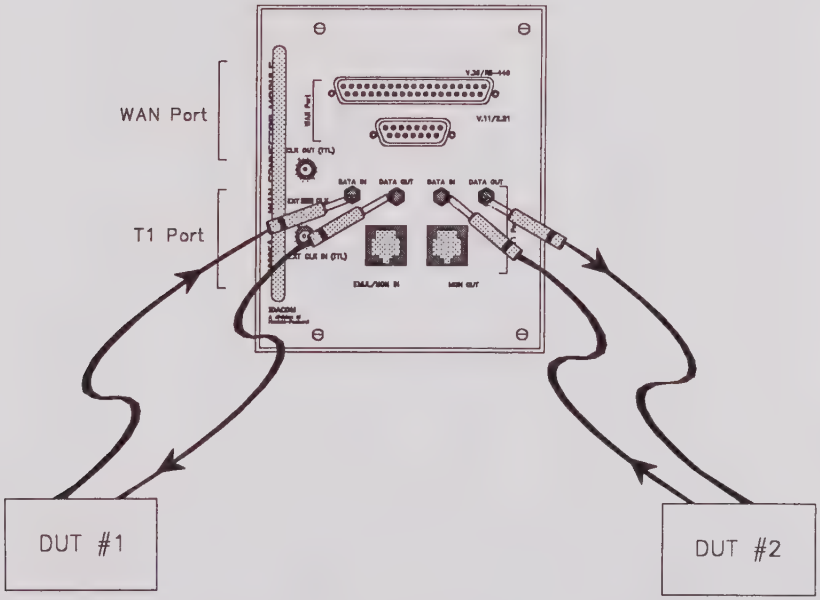


Figure 4-3 Pass-Through Passive Monitoring (Bantam Jacks)

This example applies only to T1-E1 units ordered with option #012.

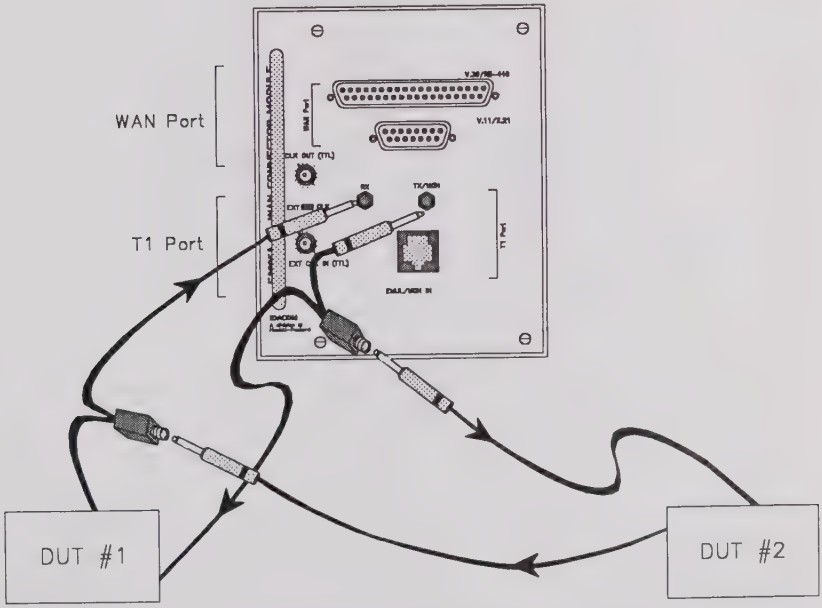


Figure 4-4 Pass-Through Passive Monitoring (Bantam Jacks)

This example applies only to T1-E1 units ordered with option #003.

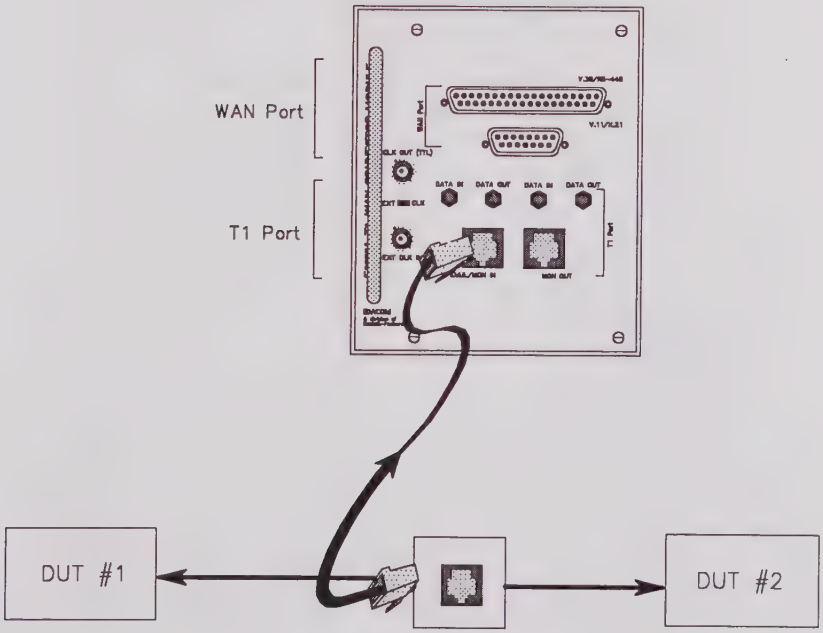


Figure 4-5 T-Tap Passive Monitoring (RJ-48C Connectors)

This example applies only to T1-E1 units ordered with option #012.

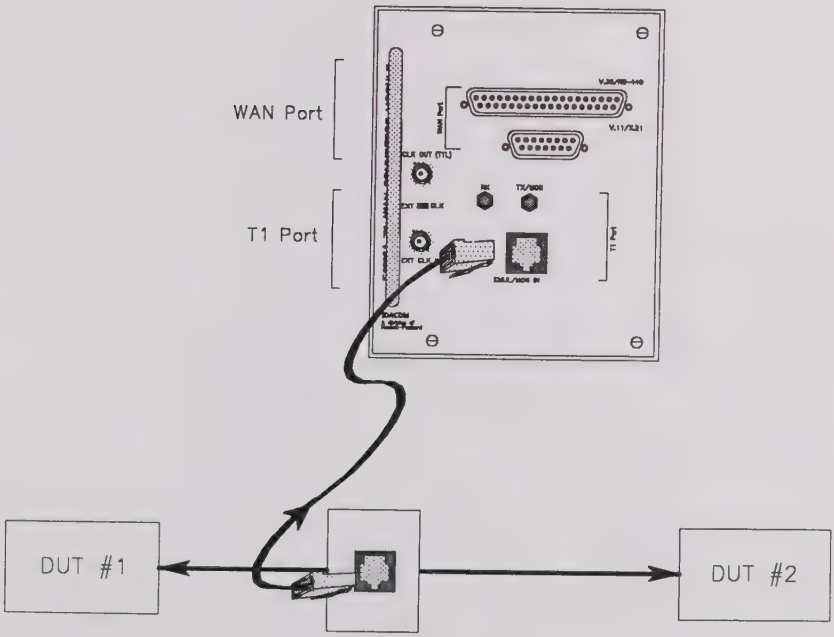


Figure 4-6 T-Tap Passive Monitoring (RJ-48C Connectors)

This example applies only to T1-E1 units ordered with option #003.

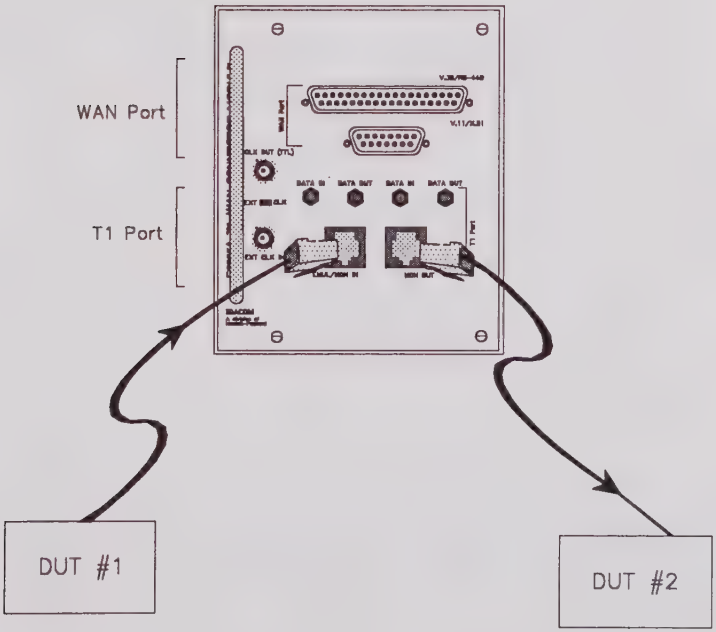


Figure 4-7 Pass-Through Passive Monitoring (RJ-48C Connectors)

This example applies only to T1-E1 units ordered with option #012.

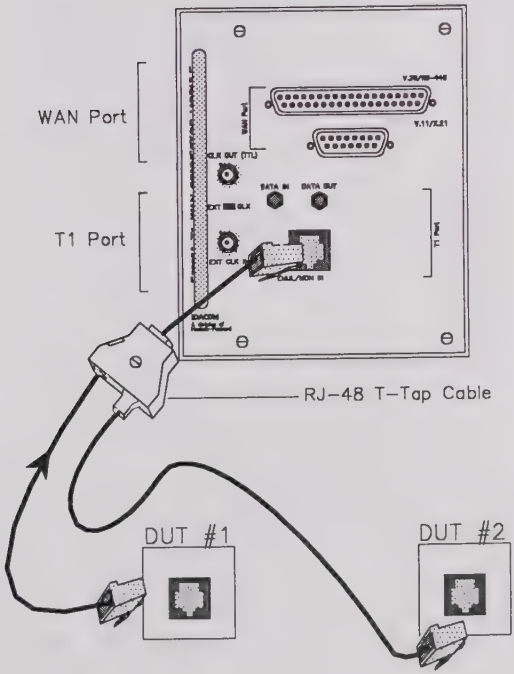


Figure 4-8 Pass-Through Passive Monitoring (RJ-48C Connectors)

This example applies only to T1-E1 units ordered with option #003.

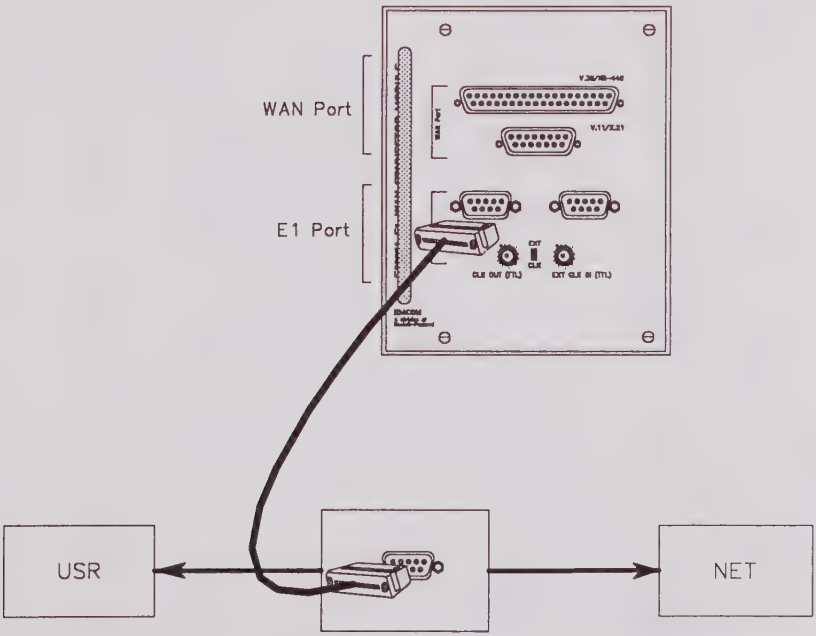


Figure 4-9 T-Tap Passive Monitoring (DB-9 Connectors)

This example applies only to T1-E1 units ordered with option #012.

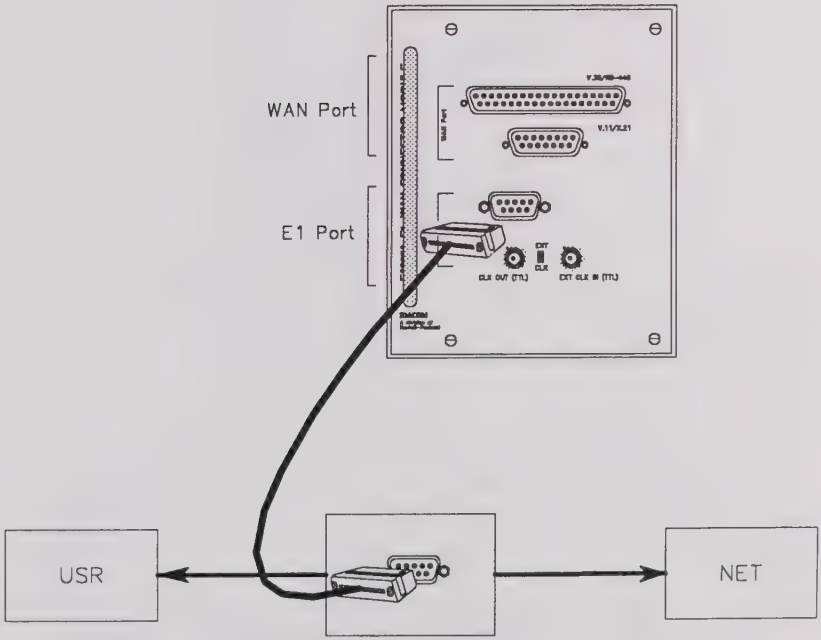


Figure 4-10 T-Tap Passive Monitoring (DB-9 Connectors)

This example applies only to T1-E1 units ordered with option #003.

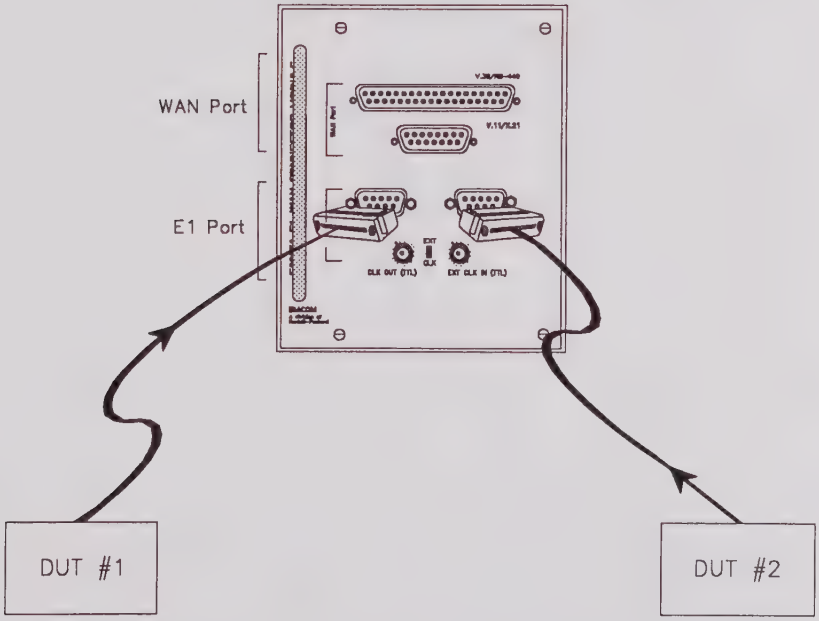


Figure 4-11 Pass-Through Passive Monitoring (DB-9 Connectors)

This example applies only to T1-E1 units ordered with option #012.

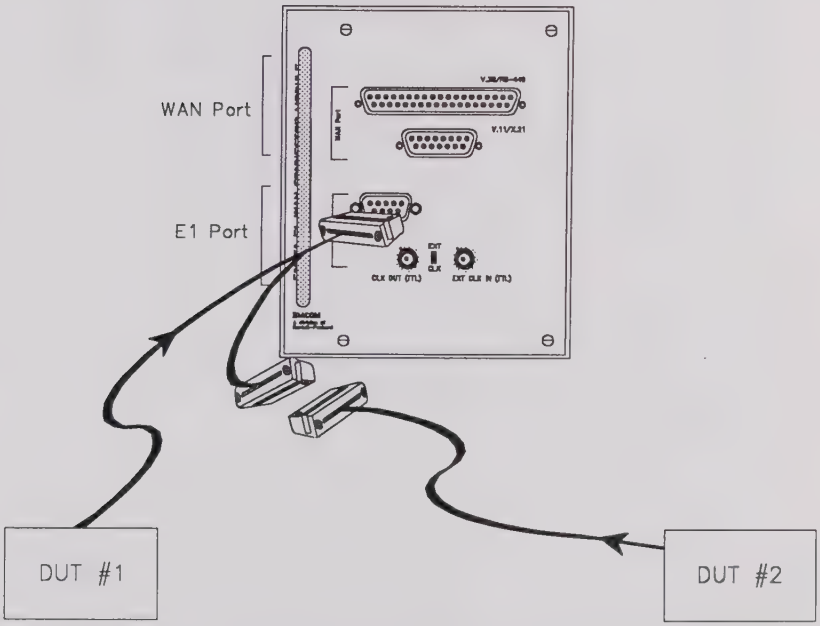


Figure 4-12 Pass-Through Passive Monitoring (DB-9 Connectors)

To Select Emulation Mode

The PT302/PT502 can emulate a protocol implementation. By default, the PT302/PT502 will provide correct protocol responses to received protocol data units automatically. This feature is explained in more detail in each protocol application user manual. You can send frames by pressing function keys, entering protocol-specific commands, or writing test programs to use the PT302/PT502 to simulate different correct or incorrect protocol behavior.

On either the RJ-48C or DB-9 connectors, the pinouts used for receiving or sending data can be reversed by selecting *EMULATE-USER* or *EMULATE-NETWORK*. Each bantam connector handles one direction of data and cannot be changed. If you are using bantam connectors, select *EMULATE-BANTAM*. See Appendix A for connector pinouts.

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Interface Mode*.
4. Press the appropriate function key:
   - f2 - *EMULATE-USER*
   - f3 - *EMULATE-NETWORK*
   - f4 - *EMULATE-BANTAM*

To Physically Connect The Tester to Emulate

This example applies only to T1-E1 units ordered with option #003.

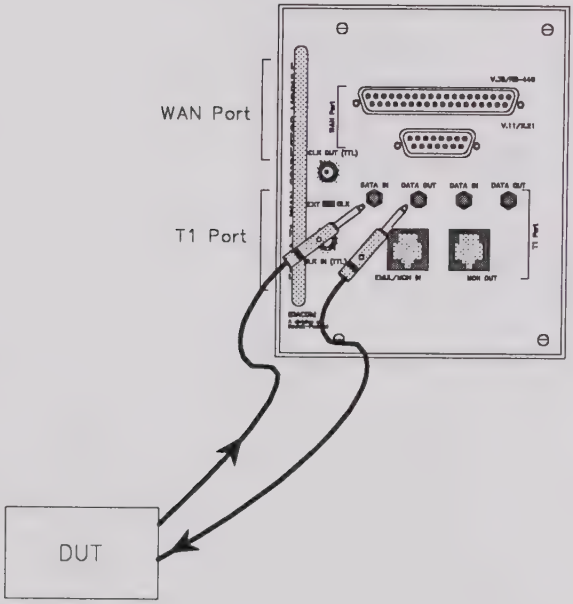


Figure 4-13 Emulating (Bantam Jacks)

This example applies only to T1-E1 units ordered with option #012.

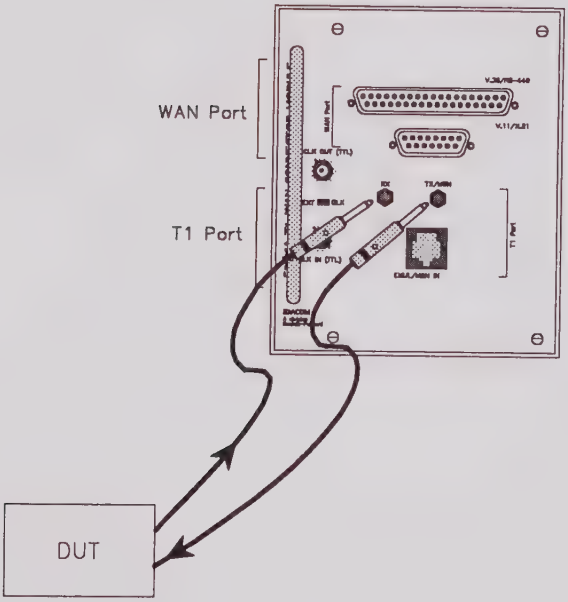


Figure 4-14 Emulating (Bantam Jacks)

This example applies only to T1-E1 units ordered with option #003.

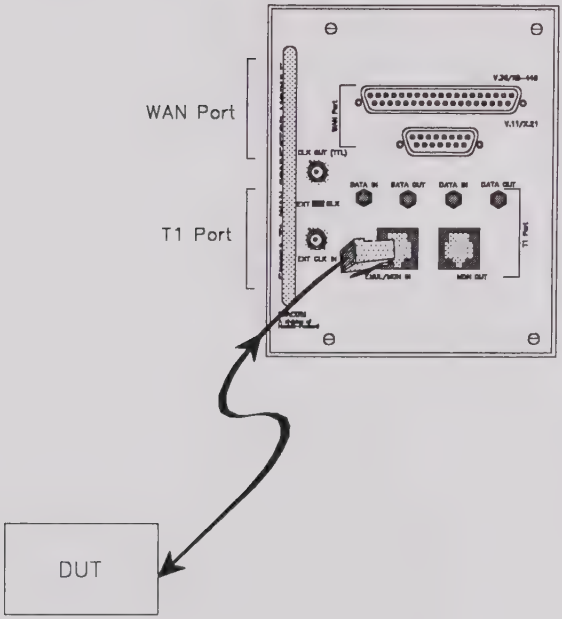


Figure 4-15 Emulating (RJ-48C Connectors)

This example applies only to T1-E1 units ordered with option #012.

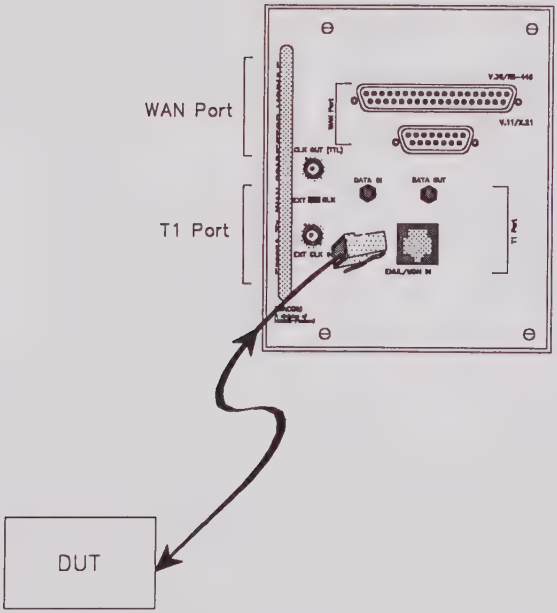


Figure 4-16 Emulating (RJ-48C Connectors)

This example applies only to T1-E1 units ordered with option #003.

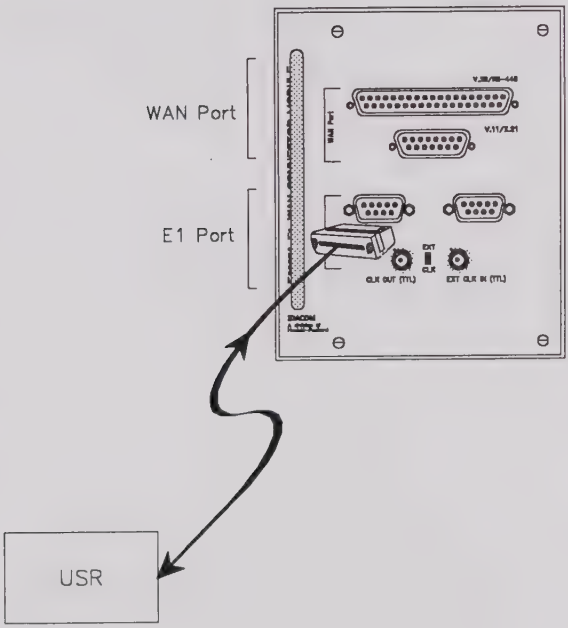


Figure 4-17 Emulating (DB-9 Connectors)

This example applies only to T1-E1 units ordered with option #012.

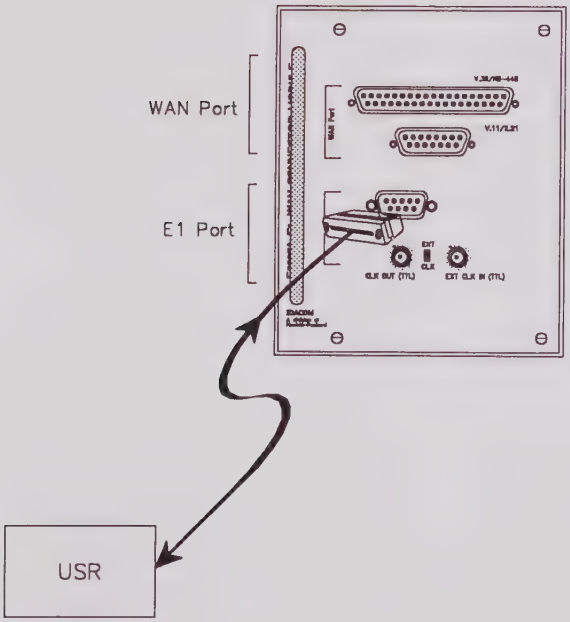
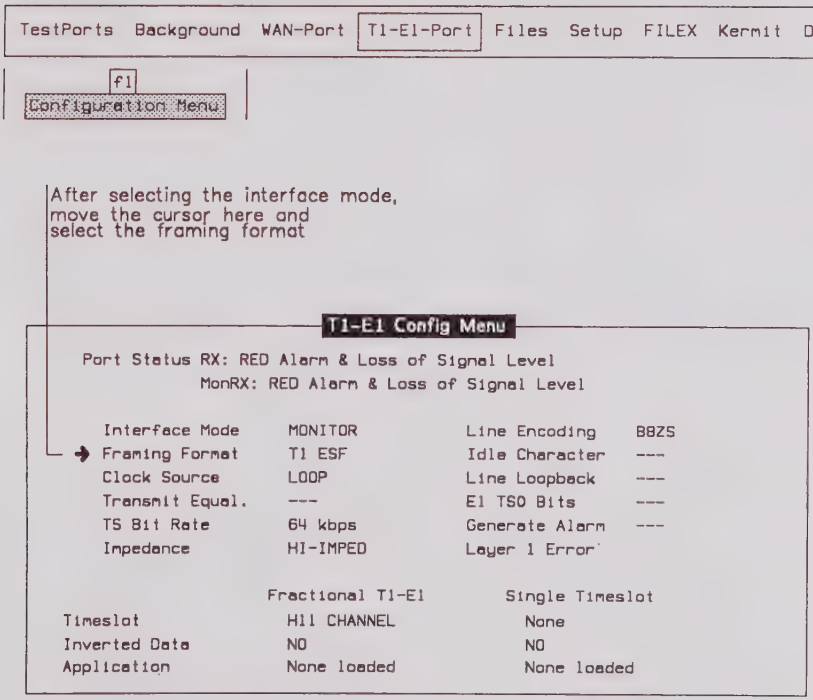


Figure 4-18 Emulating (DB-9 Connectors)

Configuring the T1-E1 Port

After you have selected the interface mode (monitor or emulation) and connected the tester, choose the framing format from the T1-E1 Config menu. A number of other settings are dependent on the framing format you select. You have the choice of testing at Fractional T1-E1 or at the Single Timeslot. Fractional T1-E1 supports T1 framing at a combined line rate of 1.544 Mb/s, and E1 framing at a combined line rate of 2.048 Mb/s; the single Timeslot supports testing at 64 Kb/s or 56 Kb/s.

If you have correctly connected the tester and configured the interface for T1 or E1 framing, the tester should be synchronized. When the tester is synchronized, the Port Status at the top of the menu is shown as *'Synchronized'* for both the RX and TX side in emulation Mode or RX and MonRX in monitor mode; the SYNC and SIGNAL LEDs on the front panel glow green (RED ALM LED is off).


TestPorts Background WAN-Port T1-E1-Port Files Setup FILEX Kermit D
f1
Configuration Menu
After selecting the interface mode, move the cursor here and select the framing format
T1-E1 Config Menu
Port Status RX: RED Alarm & Loss of Signal Level
MonRX: RED Alarm & Loss of Signal Level
Interface Mode MONITOR
Framing Format T1 ESF
Clock Source LOOP
Transmit Equal. ---
TS Bit Rate 64 kbps
Impedance HI-IMPED
Line Encoding B8ZS
Idle Character ---
Line Loopback ---
E1 TS0 Bits ---
Generate Alarm ---
Layer 1 Error
Fractional T1-E1
Single Timeslot
Timeslot
H11 CHANNEL
None
Inverted Data
NO
NO
Application
None loaded
None loaded

To Select the Framing Format

The PT302/PT502 supports T1 and E1 framing formats. The selected framing format defines the number of frames per multiframe, signalling information, and error checking. T1 framing supports 24 multiplexed channels and framing information with a combined line rate of 1.544 Mb/s; E1 supports 30 (E1PCM 30 CAS framing) or 31 (E1 PCM 30 CCS framing and E1 CRC4 framing) multiplexed channels with a combined line rate of 2.048 Mb/s.

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Framing Format.*
4. Press the corresponding function key to select the desired framing format.

T1 D4

Uses 12 frames per multiframe - robbed or common channel bit-oriented signalling (BOS) is not supported.

T1 D4 4F/M

Uses 4 frames per multiframe. The Fs bit (signalling channel framing bit) is set to 1 on the transmitter and is ignored on the receiver. This type of framing format may require a hardware modification if you are converting to a PT302/PT502; an error message will be displayed if you select this format. Call your local HP representative for information (see page 4-41).

T1 ESF

Extended Super Frame. Uses 24 frames per multiframe with embedded CRC-6 error checking. Robbed or common channel BOS is not supported.

E1 PCM30 CAS

Channel Associated Signalling. Uses 16 frames per multiframe. Timeslot 0 contains signalling information; timeslot 16 contains the channel associated signal.

E1 PCM30 CCS

Common Channel Signalling. Uses 2 frames per multiframe. Timeslot 0 contains signalling information; timeslot 16 can be used for the common channel signal or user data. This type of framing format may require a hardware modification if you are converting to a PT302/PT502; an error message will be displayed if you select this format. Call your local HP representative for information (see page 4-41).

E1 CRC4

Uses 16 frames per multiframe with embedded CRC-4 error checking and multiframing in timeslot 0.

To Select the Clock Source (emulation mode only)

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Clock Source*.
4. Press the corresponding function key to select the desired clock source.

f1 - *LOOP* (default)
The transmit clock is supplied by the DUT.

f2 - *LOCAL*
The transmit clock is supplied by the tester.

f3 - *EXTERNAL*
The transmit clock is supplied by the external clock source.

NOTE
External clock source is not selectable on the T1-E1 units ordered with option #003. Otherwise it is always used automatically when it is supplied.

To Select the Transmit Equalization (emulation mode only)

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Transmit Equal.*
4. Press the corresponding function key to select the desired line length in T1 framing.

For E1 framing, transmit equalization is automatically set according to CCITT Recommendation G.703 (1992).

To Select the Timeslot Bit Rate (T1 framing only)

You can select a timeslot bit rate of either *56 kbps* or *64 kbps* (default). You should set the speed to match the traffic on the line. The *56 kbps* selection may require a hardware modification; an error message will be displayed indicating that the bit rate has been switched to *64 kbps*. Call your local HP representative for information (see page 4-41).

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *TS Bit Rate.*
4. Press the corresponding function key to select the desired timeslot bit rate.

To Select Impedance

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Impedance*.
4. Press the corresponding function key to select the desired impedance.

Depending on the interface mode and framing format you selected, press the corresponding function key to set impedance to one of the following values:

	T1 Framing	E1 Framing
Monitor Mode	*100 OHMS* *HI-IMPED* (default)	*120 OHMS* *75 OHMS* *HI-IMPED (default)*
Emulation Mode	*100 OHMS*	*120 OHMS* *75 OHMS*

To Select Line Encoding

Selects the signal pattern by which clocking and data are carried on a 2-wire circuit.

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Line Encoding*.
4. Press the corresponding function key to select the desired line encoding.

f1 - *AMI* (T1 and E1 framing)
Alternate Mark Inversion - B7 zero code suppression.

f2 - *B8ZS* (T1 framing only) - default
Bipolar Eight Zero Substitution - prevents transmission of eight consecutive zeros on the line.

f2 - *HDB3* (E1 framing only) - default
High Density Bipolar Three zero substitution - prevents transmission of four consecutive zeros on the line.

To Select Idle Characters (emulation mode only)

Specifies the 8 bit character transmitted in idle timeslots.

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Idle Character*.
4. Press the corresponding function key to select the desired idle character.
   or
   Press function key f1 - *Modify Idle Character Value* and select the desired idle character at the prompt (not supported on T1-E1 units ordered with option #012).

To Enable Line Loopback (emulation mode only)

Loops back the entire data stream and framing information exactly as received.

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Line Loopback*.
4. Press function key f1 - *ON*.

To disable line loopback, press function key f2 - *OFF* (default).

To Modify E1 Framing Information (TX side in emulation mode)

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *E1 TS0 Bits.*
4. Press function key f1 - *Menu* to display the E1 Timeslot 0 Bits menu.
5. On the transmit bits side, move the cursor to the desired E1 bit and press the corresponding function key to set the E1 bit.

NOTE
SI 1 and SI 2 cannot be set to different values on T1-E1 units ordered with option #012.

→ *National* (All E1 framing formats)
Bits allocated for national use can be used nationally if the digital path does not cross a border. Set all bits to 1 if the digital path crosses an international border or when not being used. (refer to CCITT table 4a/G.704).

→ *SI 1* (CRC4 framing)
This is the first 'E' bit as defined in CCITT G.704 Table 4b - 2.3.3.4. Automatic reflection of CRC4 errors in this bit is not implemented.

→ *SI 2* (CRC4 framing)
This is the second 'E' bit as defined in CCITT G.704 Table 4b - 2.3.3.4. Automatic reflection of CRC4 errors in this bit is not implemented.

→ *International* (PCM30 CAS and PCM30 CCS framing)
Set to 1 on digital paths crossing an international border; can be used nationally if the digital path does not cross a border (refer to CCITT table 4b/G.704).

To Invert Data on the Line

If the line under test has no zero code suppression (i.e. not a clear channel), the line could be using inverted data to ensure data lead transitions for clock recovery.

1. Move the topic box to the **T1-E1-Port** topic.
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Inverted Data* under either **Fractional T1-E1** or **Single Timeslot.**
4. Press function key f2 - *YES.*

Assigning Timeslots

For Fractional T1-E1 testing, you can assign one timeslot, assign a series of timeslots for the H11 or H12 channels, or assign up to 24 timeslots for T1 framing and up to 31 timeslots for E1 framing to AP #1 (or AP #3 on Dual T1-WAN or Dual E1-WAN machine types). For Single Timeslot testing, you can assign only one timeslot to AP #2 (or AP #4 on Dual T1-WAN or Dual E1-WAN machine types).

To Assign Timeslots for Application Use

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Timeslot* under either *Fractional T1-E1* or *Single Timeslot.*
4. Press the corresponding function key to assign the desired timeslot.

Single Timeslot
Displays a prompt to specify a single timeslot.

H11 Channel (Fractional T1-E1 only)
Automatically selects all 24 timeslots for T1 framing, and timeslots 1 - 15 and 17 - 25 for E1 framing.

H12 Channel (Fractional T1-E1 only) - default for E1 framing
Automatically selects timeslots 1 - 15 and 17 - 31.

Fractional:
Displays the Timeslot Selection menu. For Fractional T1-E1 testing, you can assign up to 24 timeslots for T1 framing and up to 31 timeslots for E1 framing to AP #1 (or AP#3 on Dual T1-WAN or Dual E1-WAN machine types). For Single Timeslot testing, you can assign only one timeslot to AP #2 (or AP #4 on Dual T1-WAN or Dual E1-WAN machine types). For E1 PCM30 CAS, timeslot 16 is not available because it contains the multiframe associated signal.

To disconnect timeslots in monitor mode, press function key f3 - *DISCONNECT* on the Timeslot Selection menu.

To Transmit Idle Characters on Selected Timeslots (emulation mode)

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Timeslot* under either *Fractional T1-E1* or *Single Timeslot.*
4. Press the function key labelled *Fractional* to display the Timeslot Selection menu.
5. Move the cursor to a desired timeslot or *ALL Timeslots*, and press function key f3 - *IDLE.*

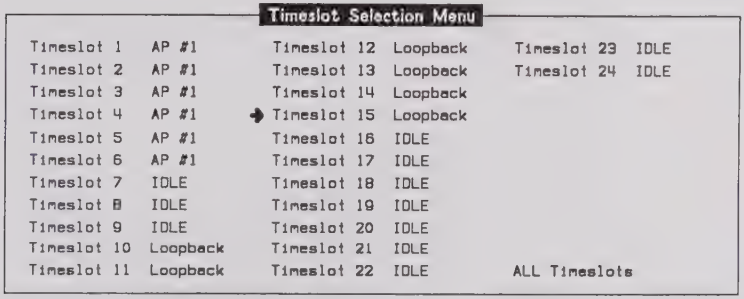
To Loop Back Received Data on Selected Timeslots (emulation mode)

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Timeslot* under either *Fractional T1-E1* or *Single Timeslot.*
4. Press the function key labelled *Fractional* to display the Timeslot Selection menu.
5. Move the cursor to desired timeslot or *ALL Timeslots,* and press function key f4 - *LOOPBACK.*

Example:

Assign timeslots 1 through 6 to AP #1, assign timeslots 10 through 15 to loop back data, and assign all remaining timeslots to transmit the idle character.

1. On the Timeslot Selection menu, move the cursor to *ALL Timeslots* and assign all timeslots to *All Idle*.
2. Move the cursor to timeslots 1 through 6 and assign AP #1 to each.
3. Move the cursor to timeslots 10 through 15 and assign *Loopback* to each.



Loading an Application

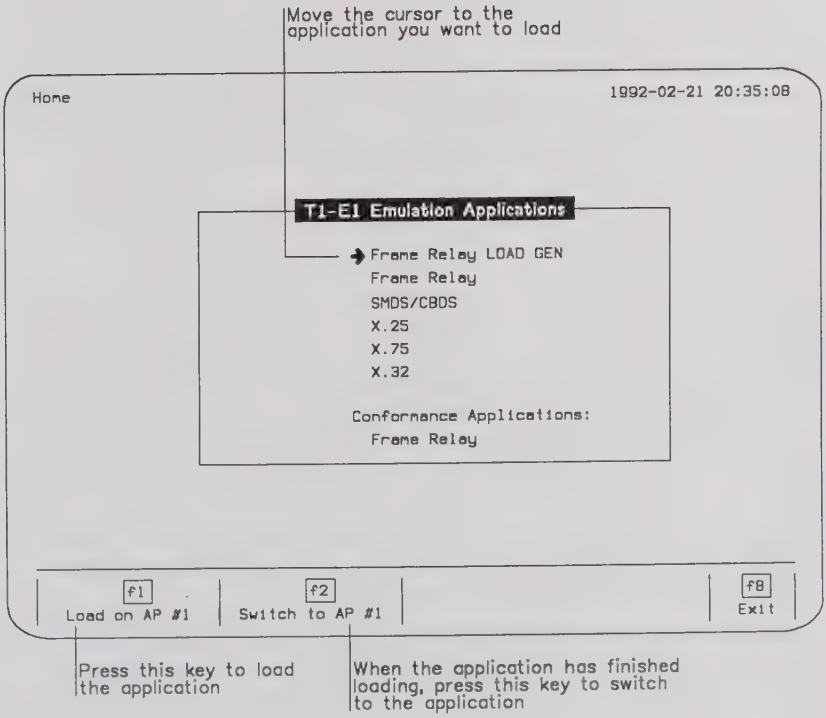
To monitor or emulate a communications protocol, you must load an application on an application processor (AP) to connect the data stream from the T1 or E1 port. Depending on whether you selected monitor or emulation mode, either the T1-E1 Monitor or the T1-E1 Emulation Applications menu can be displayed with a list of available applications.

When the application has finished loading, you can switch to the application you have just loaded; protocol-specific application topics will be displayed.

To Load an Application

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Application* under either *Fractional T1-E1* or *Single Timeslot*, and press function key f1 - *Load Application on AP #1* (or *AP #2, AP #3, or AP #4).*
4. Move the cursor to the desired application on the T1-E1 Monitor or the T1-E1 Emulation Applications menu.
5. Press function key f1 - *Load Application* and wait until the application is finished loading.
6. Press function key f2 - *Switch to AP #1* (or *Switch to AP #2* or *Switch to AP#4*) to switch to the application.

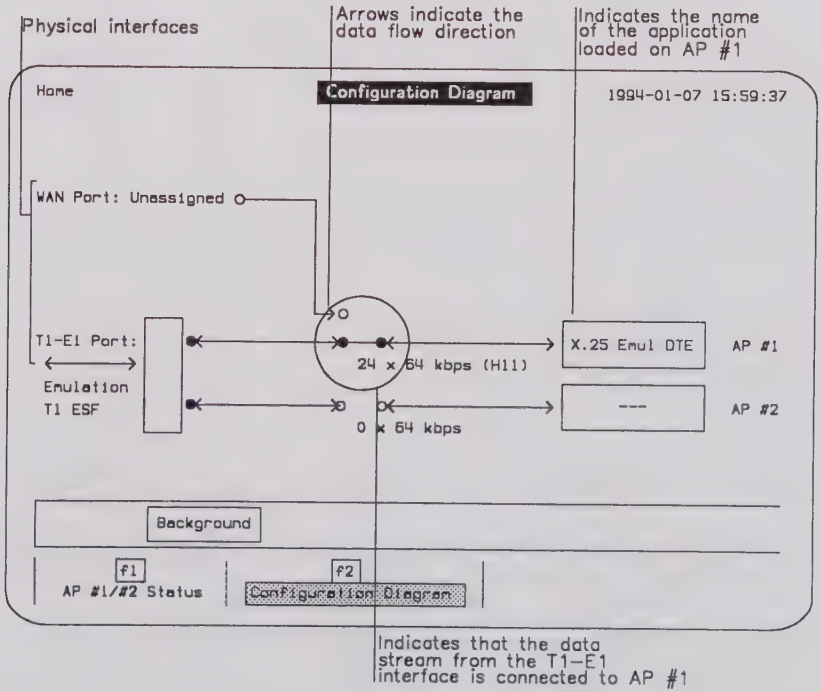
The following menu is an example of the T1-E1 Emulation Applications menu when loading an application on Fractional T1-E1.



To Check the Status of the T1 or E1 Port

The lines highlighted in green indicate an active path from the physical port to the application processor. Lines highlighted in white as on the PT502 or unhighlighted as on the PT302 indicate possible paths that are not currently in use.

1. If you have already switched to an application, press the HOME key on the keyboard to return to the HOME processor. If a menu is still displayed, press function key f8 - *Exit* or the HOME key to close the menu and display the topic bar.
2. Move the topic box to the **Background** topic.
3. Press function key f2 - *Configuration Diagram.*



Problems?

If the Port is Not Synchronized

If the tester is not synchronized, one of the following port status messages will be displayed on the Interface Configuration menu:

RED Alarm (T1 framing)
Loss of Synchronization (E1 framing)
Indicates that the local receiver has lost synchronization of incoming signals.

RED Alarm & Loss of Signal Level (T1 framing)
Loss of Sync & Loss of Signal Level (E1 framing - not supported on T1-E1 units ordered with option #012)
Indicates a loss of synchronization and signal level, no signal is detected at the receiver.

BLUE Alarm (T1 framing)
AIS (E1 framing)
Indicates that the remote receiver has lost synchronization and signal level.

YELLOW Alarm (T1 framing)
RAI (E1 framing)
Remote Alarm Indication. Indicates that the remote receiver has lost synchronization.

DMF (EI PCM30 CAS framing)
Indicates that the remote receiver (DTE only) has lost multiframe synchronization.

Out of Frame
Indicates a temporary loss of synchronization (if longer than 2.5 seconds, the receiver goes into the Red Alarm state).

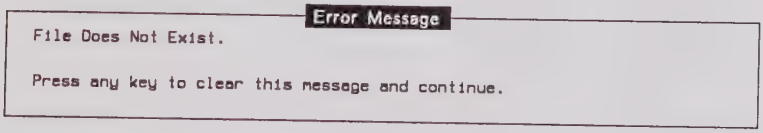
Buffer Overflow
Indicates that the internal FIFO buffer has overflowed.

To solve this problem:
- Check that all cables are connected properly.
- Check that the parameters are set correctly on the T1-E1 Config menu.

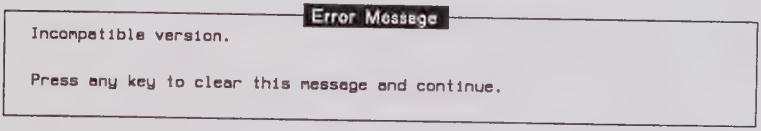
If the Application Fails to Load

The application may fail to load for one of the following reasons:

- The application file does not exist. The following error message is displayed over the application loading menu:



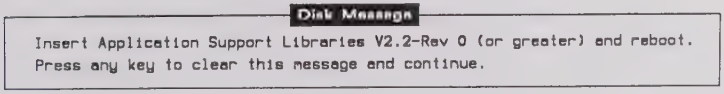
- The application file is an incompatible version. The following error message is displayed over the application loading menu:



To solve this problem:

1. Insert the disk containing the correct version of the application into floppy drive DR0.
2. Clear the message and load the application again from floppy disk.
3. If the application loads successfully, replace the existing application software on the hard disk. See the section 'Copying Files' in this manual.

- The PT was booted using an incompatible version of the files from the Support Libraries disk. The following error message is displayed over the application loading menu:


Disk Message
Insert Application Support Libraries V2.2-Rev 0 (or greater) and reboot.
Press any key to clear this message and continue.

To solve this problem:

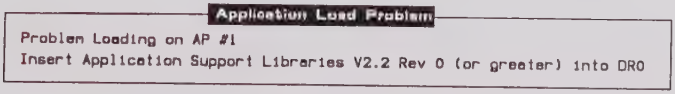
1. Insert the specified disk and reboot the PT.
2. Load the application again.
3. If the application loads successfully, install the Application Support Libraries software on hard disk partition WD0. See the PT302/PT502 Product Release Notice for instructions to install this software on the hard disk.

- The application libraries files from the application disk cannot be located on the PT, or are an incompatible version, or are corrupted. For example, for X.25 the following load problem message is displayed:

To solve this problem:

1. Insert the specified disk and press f1 to continue.
2. If the application loads successfully, install the existing application software on the hard disk. See the PT302/PT502 Product Release Notice for instructions to install this software on the hard disk.

- Files from the Application Support Libraries software cannot be located on the PT, or are an incompatible version, or are corrupted. The following application load problem message is displayed:



To solve this problem:

1. Insert the specified disk and press f1 to continue.
2. If the application loads successfully, install the Application Support Libraries software on hard disk partition WD0. See the PT302/PT502 Product Release Notice for instructions to install this software on the hard disk.

If an Application is Already Loaded on the Application Processor

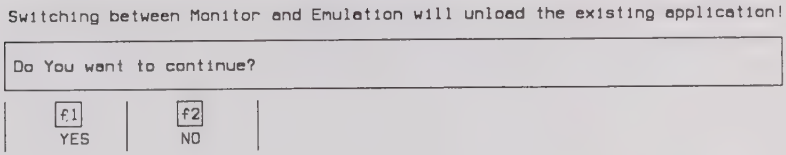
Only one application at a time can be loaded on an application processor. If an application is already loaded on the application processor on which you are trying to load a second application, the following prompt will be displayed:

To solve this problem:

- Press function key f1 - *YES* to unload the previous application and to continue loading the new one.
  or
- Press function key f2 - *NO* to abort loading the new application.

If an Application is Loaded when you Switch the Interface Mode

If an application is already loaded when you switch interface mode between monitor and emulation, the following notice and prompt will be displayed:



To solve this problem:

- Press function key - *YES* to unload the application and switch to the new interface mode.

  or

- Press function key - *NO* to abort the switching operation and keep the application loaded.

If All Else Fails

Internationally:
Tel: (403) 439-2770
Fax: (403) 430-2600

In North America
Tel: 1-800-661-3868
Fax: (403) 462-4912

5

Testing T1-E1 Layer 1 Alarms and Errors

In This Chapter

- *Monitoring Errors*
- *Generating Alarms*
- *Generating Errors*

From the HOME processor, you can monitor the following layer 1 errors with or without loading a protocol application. The types of errors reported depend on the framing format you select. In emulation mode, you can generate alarms in addition to layer 1 errors.

Bipolar Violation (T1 and E1 framing)
Occurs when two positive or two negative pulses occur sequentially and are not part of the B8ZS or HDB3 encoding schemes.

Framing Errors (T1 and E1 framing)
Occurs when one of the framing bits does not match what the receiver expects.

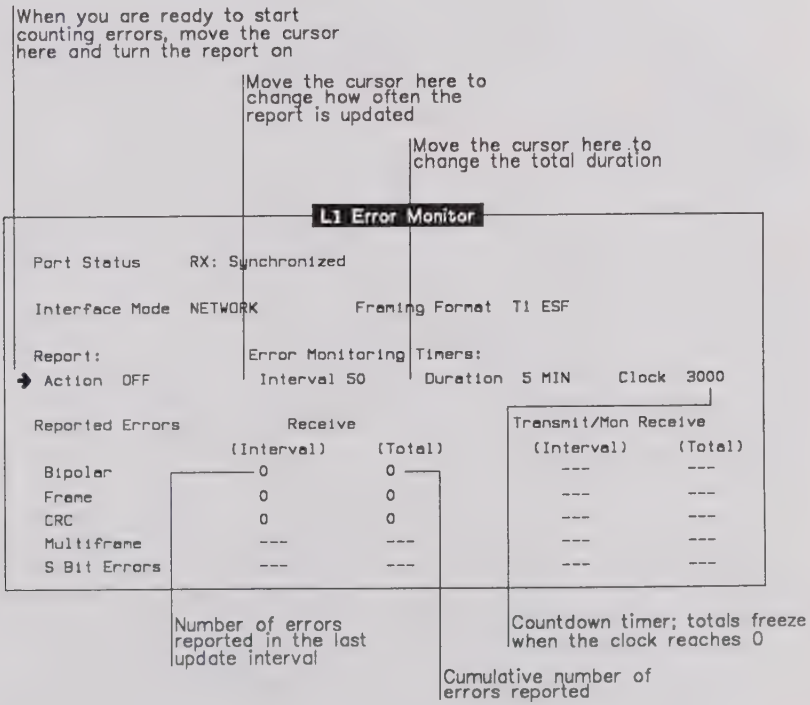
CRC Errors (E1 CRC4 and T1 ESF framing)
Occurs when a cyclic redundancy check (CRC) is different than expected.

Multiframe Errors (E1 CRC4 framing)
Occurs when an error is detected in the multiframe alignment pattern.

S Bit Errors (T1 D4 framing)
Occurs when a received signalling bit is different than expected.

Monitoring Errors

By default, the PT302/PT502 counts errors for a duration of 5 minutes and updates the report at 5 second intervals. Errors are totaled for each interval as well as for the total duration. You can modify these default values on the L1 Error Monitor menu.


When you are ready to start counting errors, move the cursor here and turn the report on
Move the cursor here to change how often the report is updated
Move the cursor here to change the total duration
L1 Error Monitor
Port Status RX: Synchronized
Interface Mode NETWORK
Framing Format T1 ESF
Report:
Action OFF
Error Monitoring Timers:
Interval 50
Duration 5 MIN
Clock 3000
Reported Errors
Receive
(Interval)
(Total)
Transmit/Mon Receive
(Interval)
(Total)
Bipolar 0 0 --- ---
Frame 0 0 --- ---
CRC 0 0 --- ---
Multiframe --- --- --- ---
S Bit Errors --- --- --- ---
Number of errors reported in the last update interval
Countdown timer; totals freeze when the clock reaches 0
Cumulative number of errors reported

To Set the Update Interval

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Layer 1 Error.*
4. Press function key f1 - *Error Monitor* to display the L1 Error Monitor menu.
5. Move the cursor to *Interval* and press function key f1 - *Set Interval.*
6. Enter the desired interval (in tenths of seconds) at the prompt and press RETURN.

To Set the Total Duration

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Layer 1 Error.*
4. Press function key f1 - *Error Monitor* to display the L1 Error Monitor menu.
5. Move the cursor to *Duration.*
6. Press the corresponding function key to count errors for 5, 10, 15, 30, 60 minutes, or to count errors continuously.

To Start Counting Errors

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Layer 1 Error.*
4. Press function key f1 - *Error Monitor* to display the L1 Error Monitor menu.
5. Move the cursor to *Action.*
6. Press function key f2 - *ON* to start error reporting.

Example:

Monitor errors for a total duration of 5 minutes, updating the error report every 6 seconds.

L1 Error Monitor

```
Port Status      RX: Synchronized

Interface Mode  NETWORK          Framing Format  T1 ESF

Report:                  Error Monitoring Timers:
→ Action  ON              Interval 60      Duration  5 MIN     Clock  1800

Reported Errors            Receive                  Transmit/Mon Receive
                        (Interval)    (Total)        (Interval)     (Total)
  Bipolar                   3             4             ---           ---
  Frame                     0             0             ---           ---
  CRC                       2             2             ---           ---
  Multiframe                ---           ---           ---           ---
  S Bit Errors              ---           ---           ---           ---
```

After counting errors for 1 minute, 4 bipolar and 2 CRC errors have been reported. Since the last update, 3 bipolar and 2 CRC errors have been counted.

Generating Alarms

In emulation mode, you can generate alarms.

Yellow Alarm (T1 framing)
Occurs when the remote receiver loses synchronization.

RAI (E1 framing)
Generates a remote alarm indication signal when the remote receiver loses synchronization.

Blue Alarm (T1 framing)
Generates continuous ones to remain in clock synchronization; data frames are not sent.

AIS (E1 framing)
Generates an alarm indication signal.

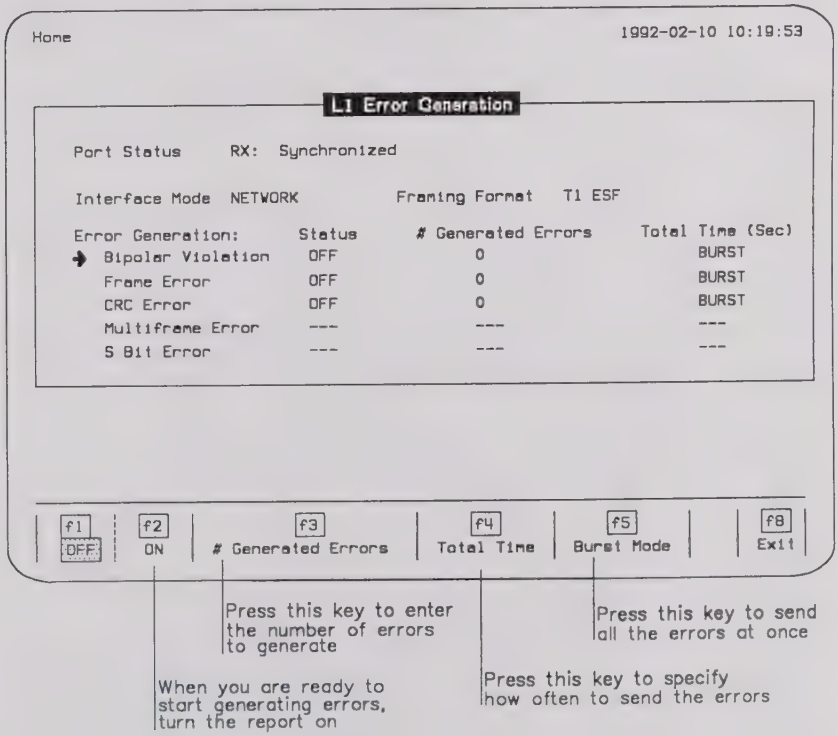
DMF (El PCM30 CAS framing only)
Generates a distant multiframe alarm (not supported on T1-E1 units ordered with option #003).

To Generate Alarms

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (Dual T1-WAN or Dual E1-WAN machine type)
2. Press function key f1 - *Configuration Menu* to display the T1-E1 Config menu.
3. Move the cursor to *Generate Alarms*.
4. Press the appropriate function key to generate the desired alarm.

Generating Errors

In emulation mode, you can generate various layer 1 errors. You can specify how many times to generate each error in a set time interval. You set error parameters on the L1 Error Generation menu, which is a submenu to the T1-E1 Config menu. This function is not supported on T1-E1 units ordered with option #012.


Home
1992-02-10 10:19:53
L1 Error Generation
Port Status RX: Synchronized
Interface Mode NETWORK
Framing Format T1 ESF
Error Generation:
Status
Generated Errors
Total Time (Sec)
Bipolar Violation OFF 0 BURST
Frame Error OFF 0 BURST
CRC Error OFF 0 BURST
Multiframe Error --- --- ---
S Bit Error --- --- ---
f1 OFF
f2 ON
f3 # Generated Errors
f4 Total Time
f5 Burst Mode
f8 Exit
Press this key to enter the number of errors to generate
When you are ready to start generating errors, turn the report on
Press this key to specify how often to send the errors
Press this key to send all the errors at once

To Specify the Number of Errors to Generate

1. Move the topic box to the appropriate topic:
   - **T1-E1-Port** (T1-WAN or E1-WAN machine type)
   - **T1-E1-Port1** or **T1-E1-Port2** (dual T1-WAN or Dual E1-WAN machine type)
2. Move the cursor to *Layer 1 Error.*
3. Press function key f2 - *Error Generation* to display the L1 Error Generation menu.
4. Move the cursor to the desired error on the L1 Error Generation menu and press function key f3 - # Generated Errors.
5. Enter the number of errors to generate and press RETURN.

To Set the Time Interval for Each Error

1. Move the cursor to the desired error on the L1 Error Generation menu.
2. Press one of the following function keys to select how often to send errors:
   - f4 - *Total Time*
     Displays a prompt to specify the time interval (in seconds). Once error generation is enabled, errors are sent after every interval until you disable error generation. The numbers of errors sent is specified using function key f3 - *# Generated Errors* (as described above).
   - f5 - *Burst Mode*
     Sends one burst of errors each time error generation is enabled. The numbers of errors sent is specified using function key f3 - *# Generated Errors* (as described above).turned on.

To Start Generating Errors

1. Move the cursor to the desired error on the L1 Error Generation menu.
2. Press function key f2 - *ON.*

6
Managing Your Files

In This Chapter

- *Listing a Directory*
- *Copying Files*
- *Comparing Files*
- *Renaming Files*
- *Deleting Files*
- *Merging Files*
- *Initializing a Disk*
- *Backing up Files*
- *Restoring Backup*

Floppy and Hard Disk Drives

Mass storage is available on one or two 800 Kbyte or 1.44 Mbyte floppy disk drives and a 80 Mbyte or 245 Mbyte SCSI hard disk. Along with the common file functions (copying, deleting, renaming, merging, etc.), the **Files** topic is used to manage the floppy and hard disk drives.

Floppy disk drives are named DR0 and DR1 (PT502 only) and use standard 3.5 inch double-sided, double-density floppy disks. If your tester has a SCSI hard drive, the tester also supports 1.44 Mbyte high density floppy disks. You must, however, format each floppy disk on the tester and specify a file system name prior to using it.

Prior to shipping, the hard disk has been formatted and divided into four partitions (WD0 through WD3) with the following file system names. You can repartition the hard disk into up to eight partitions (up to 32 partitions if your tester has a SCSI drive), redefine the sizes of each, and rename the file systems.

Partition	File System Name	Kbytes	Contents
WD0	SYSTEM	3000	Operating System software Home Menu software
WD1	APPLICATIONS	40000	Application software
WD2	PROGRAMS	2000	User test scripts
WD3	DATA	Remainder	Data recordings & general purpose

Files

A file can be no longer than 408 lines in length, unless the tester has more than 360 Kbytes free; in this case a file can be up to 2000 lines in length. Filenames must be unique on each specified floppy disk or hard disk partition. All of the file functions described in this chapter require that you specify the filename in a prompt. The filename itself cannot exceed 14 characters. The current device (for example, DR0, WD1) can either be selected separately on the menu or specified in the prompt in addition to the filename (drive and filename are separated by a colon ':'. In this case, drive and filename together cannot exceed 18 characters. Specifying a device in the prompt overrides the menu selection.

The following wildcards can be used in a filename:

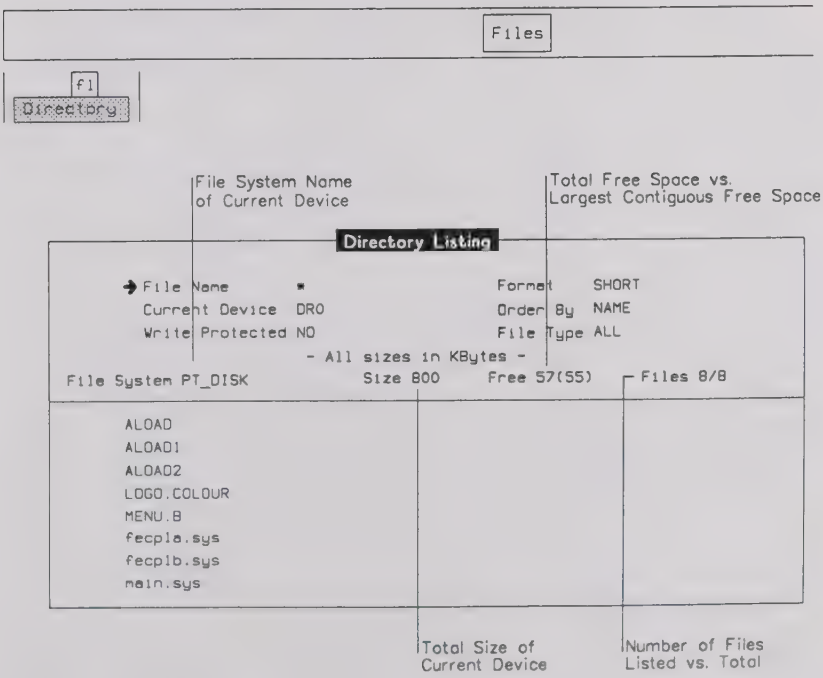
- a question mark (?) matches any single character
- square brackets ([...]) match any one of the characters enclosed in the brackets. Ranges of characters can also be specified in square brackets (for example, [1-9] matches any of the digits 1 through 9, inclusive).
- an asterisk (*) matches any number of characters

Listing a Directory

The Directory Listing menu is used to list the files on a floppy disk or hard disk partition. By default, the names of all files on the current device are listed. You can filter the directory listing to display only files matching a specified filename, and/or files of a certain type. The format of the directory listing can be modified to display only filenames (short) or all file attributes (long). The directory listing can be sorted by these file attributes.

The following status information is also displayed for the current device:

- the file system name (defined in the initialization process)
- the size of the file system (in Kbytes)
- the total and largest contiguous free space available
- the number of files currently displayed versus the total number of files



To List Files in a Directory

Whenever you enter the Directory Listing menu, the filename defaults to the asterisk (*) wildcard character. Therefore, when you modify the current device, all files in that directory will be listed on the menu.

1. Move the topic box to the **Files** topic.
2. Press function key f1 - *Directory* to display the Directory Listing menu.
3. Move the cursor to *Current Device.*
4. To select a floppy drive, press the corresponding function key to select DR0, or DR1 (PT502 only).
   or
   To select a hard drive partition, press the function key labelled *Hard Drive Menu* to display the Hard Drive menu. Move the cursor to the desired hard drive partition and press function key f3 - *Select Hard Drive.* (Use function key f1 - *Page Down* or function key f2 - *Page Up* to see additional menu pages.) Return to the Directory Listings menu to see file listings for the selected partition.

To Locate Specific Files

You can quickly locate a file by specifying the filename (with or without wildcards) on the Directory Listing menu. Only files matching that filename will be listed for the currently selected device.

1. On the Directory Listing menu, move the cursor to *File Name.*
2. Press function key f3 - *Change File Name.*
3. Enter the desired filename (wildcards are allowed) and press RETURN.
4. List the files in each directory until the desired file or files are displayed on the menu.

For example, if you wanted to search for an X.25 script but were not sure of the exact filename, specify the filename using a wildcard: `'X25*.F'`. List each device until the file is displayed.

To Scroll Up or Down to Display More Files

When more files are listed than can be displayed on one screen, arrows are shown on the right side of the menu indicating more files in the indicated direction (up or down).

1. On the Directory Listing menu, move the cursor to any menu item.
2. Press function key f1 - *Page Down* to scroll forward one screen.
   or
   Press function key f2 - *Page Up* to scroll backward one screen.

To Display File Attributes

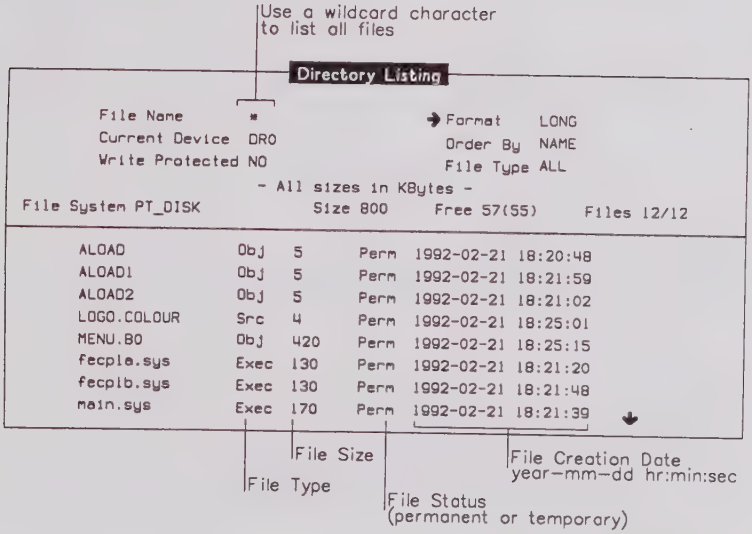
The default display is in short format; only filenames are displayed. You can modify the display to include the file type, size, status, and creation date.

1. On the Directory Listing menu, move the cursor to *Format.*
2. Press function key f4 - *LONG.*

To display files in short format, press function key f3 - *SHORT.*

Example:

List all files on DR0 and display file attributes.


Use a wildcard character to list all files
Directory Listing
File Name *
Current Device DR0
Write Protected NO
Format LONG
Order By NAME
File Type ALL
- All sizes in KBytes -
File System PT_DISK
Size 800
Free 57(55)
Files 12/12
ALOAD Obj 5 Perm 1992-02-21 18:20:48
ALOAD1 Obj 5 Perm 1992-02-21 18:21:59
ALOAD2 Obj 5 Perm 1992-02-21 18:21:02
LOGO.COLOUR Src 4 Perm 1992-02-21 18:25:01
MENU.BO Obj 420 Perm 1992-02-21 18:25:15
fecple.sys Exec 130 Perm 1992-02-21 18:21:20
fecplb.sys Exec 130 Perm 1992-02-21 18:21:48
main.sys Exec 170 Perm 1992-02-21 18:21:39
File Size
File Type
File Status (permanent or temporary)
File Creation Date year-mm-dd hr:min:sec

In this example, 12 files were located on DR0; only the first 8 can be displayed on the first screen. Press function key f1 - *Page Down* to display the other 4 files.

To Reorder the List of Files

By default, files are sorted by name. You can reorder the files by size (smallest to largest), by type (system files first, then object, source, and data files), or by creation date (oldest to most current). Sorting by date is useful to locate the latest version of a test script, or to quickly isolate a data recording that was created on a specific date.

1. On the Directory Listing menu, move the cursor to *Order By.*
2. Press the corresponding function key to sort files by name, size, type, or date.

To List a Specific Type of File

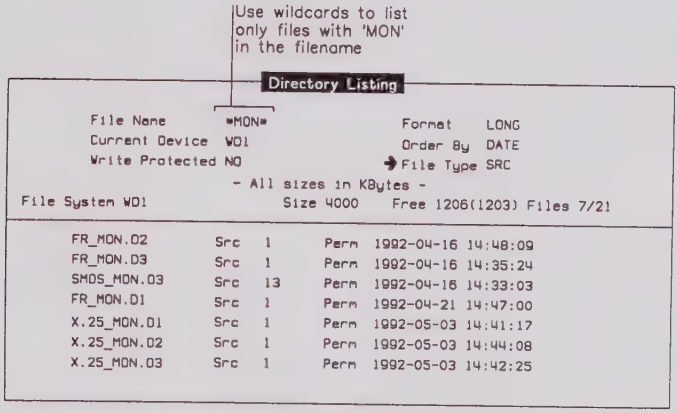
By default, all files are listed for the current device, regardless of type; however, you can list only those files of a specific type.

1. On the Directory Listing menu, move the cursor to *File Type.*
2. Press the corresponding function key to list either:
   - all files (*ALL*)
   - source code files (*SRC)*
   - data files (*DATA*),
   - object files (*OBJ*).
   - executable files *(EXEC)*
   - user files *(USER)*
   - conformance files or special configuration files for SS#7 and USM applications *(CONF)*
   - Test Manager object files *(TOBJ)*
   - active object files *(AOBJ)*
   - ASCII text files *(TEXT)*

   all files (*ALL*), source code files (*SRC*), data files (*DATA*), or object files (*OBJ*).

Example:

List all monitor default configuration source files on WD1. Display file attributes and reorder files starting with the oldest date.


Use wildcards to list only files with 'MON' in the filename
Directory Listing
File Name *MON*
Format LONG
Current Device WD1
Order By DATE
Write Protected NO
File Type SRC
- All sizes in KBytes -
File System WD1
Size 4000 Free 1206(1203) Files 7/21
FR_MON.02 Src 1 Perm 1992-04-16 14:48:09
FR_MON.03 Src 1 Perm 1992-04-16 14:35:24
SMOS_MON.03 Src 13 Perm 1992-04-16 14:33:03
FR_MON.01 Src 1 Perm 1992-04-21 14:47:00
X.25_MON.01 Src 1 Perm 1992-05-03 14:41:17
X.25_MON.02 Src 1 Perm 1992-05-03 14:44:08
X.25_MON.03 Src 1 Perm 1992-05-03 14:42:25

In this example, 21 files were located on WD1, but only 7 were source files that contained 'MON' in the filename.

To the Check Amount of Free Space on Disk

Before you install software, or create or copy files, you might want to check the remaining contiguous free space on the hard disk partition. The total free space and largest contiguous free space is displayed on the Directory Listing menu on the status line immediately before the actual file listing
(eg. Free 57(55)). The first number indicates the total free space on the current device; the second number indicates the largest contiguous free space.

1. On the Directory Listing menu, move the cursor to *Current Device.*
2. Press the function key labelled *Hard Drive Menu* to display the Hard Drive menu and notice the amount of free space displayed for each partition.

To Write-Protect a Device

Write-protecting a device ensures that files will not be accidentally erased. For example, you might want to write-protect WD0 since the Operating System and Home Menu files are located on that partition.

1. On the Directory Listing menu, move the cursor to *Current Device.*
2. Press the corresponding function key to select the desired device.
3. Move the cursor to *Write Protected.*
4. Press function key f3 - *Write Protect.*

To remove write-protect, press function key f4 - *UnProtect.*

WARNING
If using the Remote Test package (RTP) version of the Home Menu, do not write-protect WD0; otherwise the 'ROUTE.DATA' file cannot be written to when modifying route entries.

Copying Files

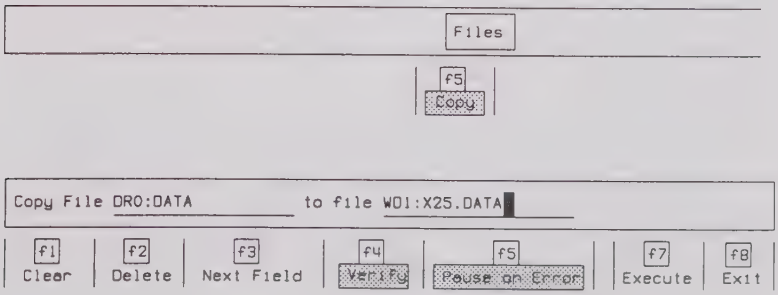
You can copy a single file or multiple files from a hard disk partition or floppy disk to another. Wildcards can be specified in the source filename to copy multiple files; wildcards are not allowed in the destination filename. Use the backup function when copying files larger than 790 Kbytes to double density disks, or larger than 1.4 Mbytes when copying to high density disks.

To Copy a File

1. Move the topic box to the **Files** topic.
2. Press function key f5 - *Copy*.
3. Enter the source device and filename in the first field.
4. Press function key f3 - *Next Field*.
5. Enter the target device; the filename is only required if you want to rename the file on the target device.
6. Press RETURN to start copying.

Example:

Copy the file 'DATA' from DR0 to WD1 with a filename of 'X25.DATA'.



To Pause if an Error Occurs

Before you copy a file or files, you can set the tester to pause and report if an error occurs. Depending on the severity of the error, you can then choose to continue or to abort the copy. If the error is not recoverable, the copy will be aborted.

1. At the copy prompt, specify the source and destination file or files.
2. Press (highlight) function key f5 - *Pause on Error* and press RETURN to start copying.
3. If an error occurs, press function key f1 - *YES* to continue or function key f2 - *NO* to abort the copy.

To remove the pause condition, press (unhighlight) function key f5 - *Pause on Error.*

To Compare the Copy to the Original

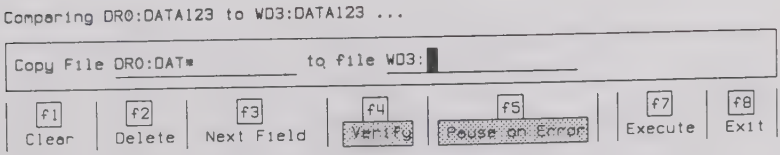
Before you copy a file or files, you can set the tester to verify the files as they are copied.

1. At the copy prompt, specify the source and destination file or files.
2. Press (highlight) function key f4 - *Verify* and press RETURN to start copying.

To remove the verify condition, press (unhighlight) function key f4 - *Verify.*

Example:

Copy all files beginning with 'DAT' on DR0 to WD3. Set the tester to verify the files against the original and to pause if an error occurs.



In this example, the file 'DATA123' was copied to WD3 and a notice is displayed indicating that the file is being compared to the copy on WD3.

Comparing Files

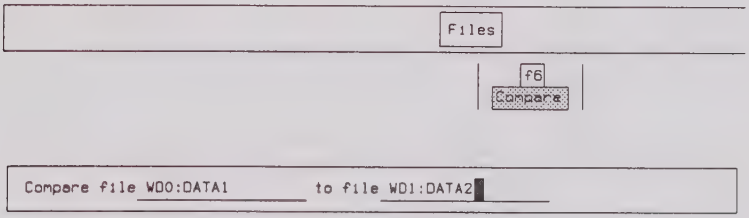
The compare function is used to verify files against the original. Wildcards can be specified in the filename. For example, you might want to verify that files backed up on floppy are the same as those on the hard disk.

To Compare Files

1. Move the topic box to the **Files** topic.
2. Press function key f6 - *Compare*. Enter the device and filename of the first file.
3. Press function key f3 - *Next Field.*
4. Enter the device and filename of the comparison file in the second field. Press RETURN to start comparing the files.

Example:

Compare the file 'DATA1' on WD0 with 'DATA2' on WD1.



To Pause if an Error Occurs

Before you start comparing files, you can set the tester to pause and report if an error occurs. You can then choose to continue or to abort the comparison.

1. At the compare prompt, specify the files to compare.
2. Press (highlight) function key f4 - *Pause on Error.*
3. Press RETURN to start comparing the files.
4. If an error occurs, press function key f1 - *YES* to continue or function key f2 - *NO* to abort the copy.

To remove the pause condition, press (unhighlight) function key f4 - *Pause on Error.*

To Confirm the Deletion

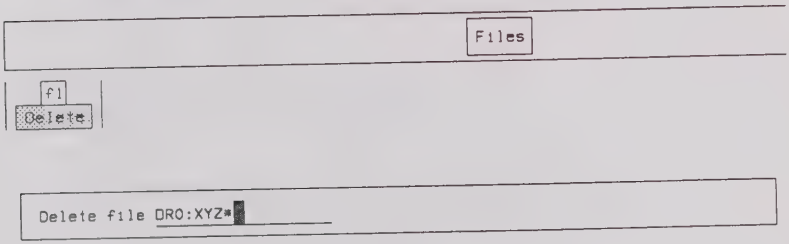
Before you delete a file, you can set the tester to confirm the deletion. By default, confirmation is required.

1. Move the topic box to the **Files** topic.
2. Press function key f1 - *Directory* to display the Directory Listing menu.
3. Move the cursor to the file you want to delete and press (highlight) function key f4 - *Delete Confirm* to confirm the deletion of the specified file.

NOTE
The 'confirm delete' function works only when deleting files from the Directory Listing menu. Refer to Example 2 (page 6-16).

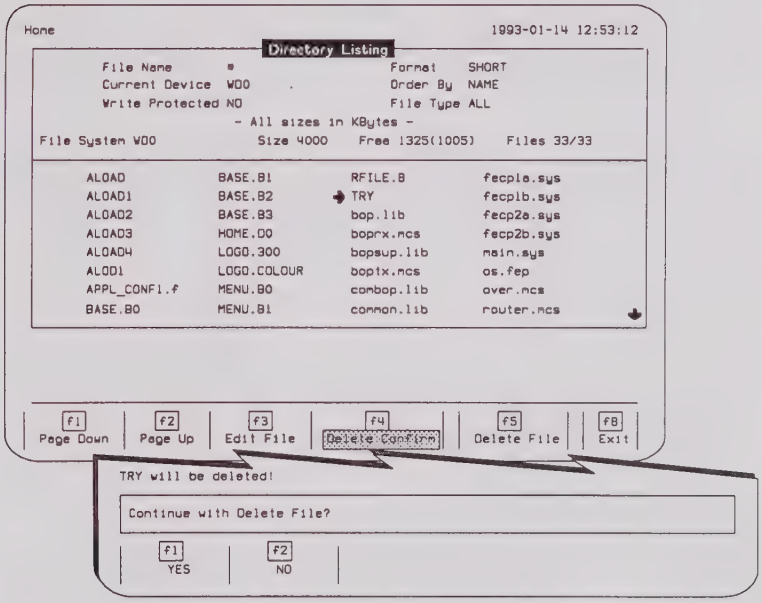
Example 1:

Delete all files beginning with the characters 'XYZ' from DR0.



Example 2:

On the Directory Listing menu with *Delete Confirm* highlighted, delete the file 'TRY' from WD0.



Merging Files

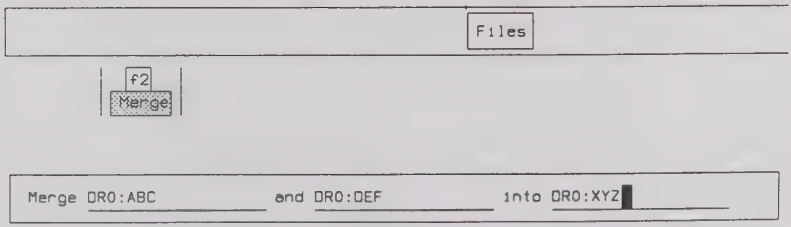
Two source files, with a combined total of less than 408 lines (200 lines if the tester has more than 360 Kbytes free), can be merged (concatenated) into a single file; however, wildcards cannot be used to merge files.

To Merge Two Source Files into a Single File

1. Move the topic box to the **Files** topic.
2. Press function key f8 - *OTHERS.*
3. Press function key f2 - *Merge.*
4. Enter the device and filename in the first field and press function key f3 - *Next Field.*
5. Enter the device and filename in the second field and press function key f3 - *Next Field.*
6. Enter the device and merged filename in the last field. Press RETURN to merge the first two files into one.

Example:

Merge the files 'ABC' and 'DEF' on DR0 into the file 'XYZ'.



Initializing a Disk

This section contains instructions to initialize (format) floppy and hard disks. The formatting procedure deletes the entire contents of the disk. Floppy disks must be formatted and a file system name must be created before they can be used on the tester.

The hard disk is already formatted and partitioned at the factory. If seriously damaged (for example, de-magnetized), the hard disk must be formatted and partitioned.

To Initialize a Floppy Disk

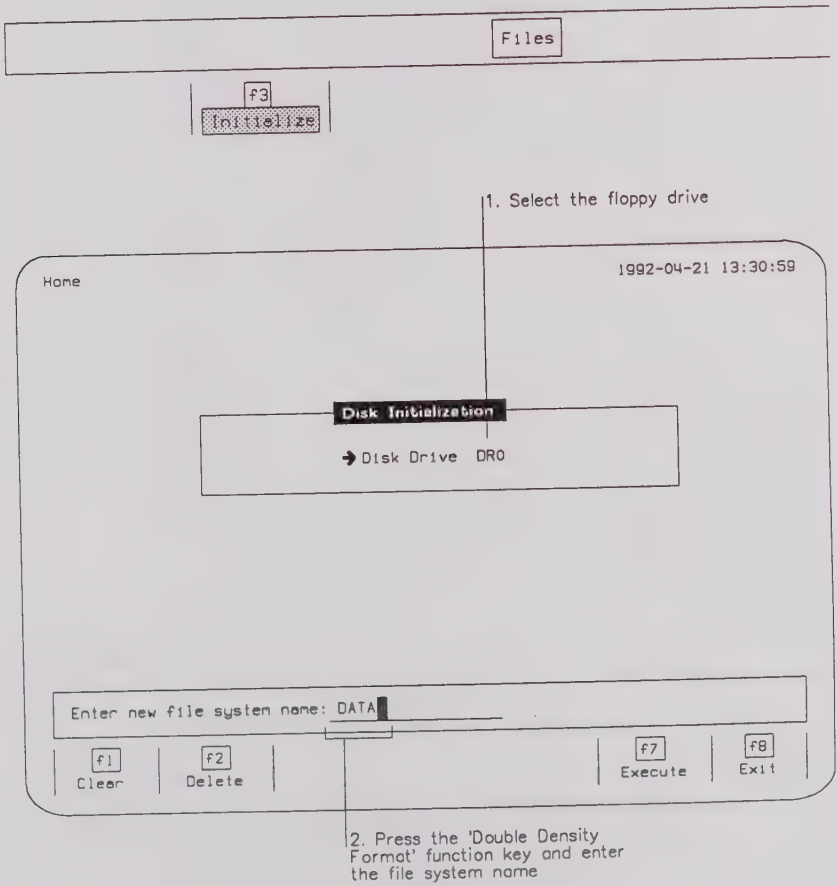
Before you begin using a new floppy disk, initialize the disk on the tester. This process **deletes the current contents**, formats the disk in PT format, and creates a file system name on the disk. PT formatted disks cannot be formatted and used on a PC without first using an electromagnet.

After initializing a disk, note that high density formatted disks cannot be used in testers that support only double density disks.

1. Move the topic box to the **Files** topic.
2. Press function key f8 - *OTHERS.*
3. Press function key f3 - *Initialize* to display the Disk Initialization menu.
4. Press the function key labelled *DR0* or *DR1* (PT502 only) to select the desired floppy disk drive.
5. If your tester supports double density disks, press function key f1 - *Double Density Format.*
   or
   If your tester supports high density disks, press function key f1 - *Double Density Format*, or function key f2 - *High Density Format.*
6. Enter the new file system name (maximum 14 characters) and press RETURN. A warning message will be displayed.
7. Press function key f7 - *Execute* to continue or function key f8 - *Exit* to quit.

Example:

Insert a double density floppy disk in DR0. Format the disk and create a file system named 'DATA'. Leave the disk in DR0 and list the directory; the file system name will be displayed on the status line on the Directory Listing menu.



To Format the Hard Disk

The hard disk should only be reformatted in the event of a disk failure or exposure to strong magnetic fields. Formatting the hard disk **deletes the contents of the entire hard disk** (all partitions). The hard disk is formatted using the stand-alone utilities software shipped with the tester.

For units that do not have a SCSI hard drive:

1. Insert the disk labelled 'STAND-ALONE UTILITIES' into DR0.
2. Turn the power switch on or press the RESET button. A prompt is displayed to start running diagnostics.
3. At the prompt, type: `N`. The Main menu will be displayed.
4. Press function key f1 - *Format Hard Disk.* A warning and a prompt will be displayed. At the prompt, type: `Y` to continue with formatting, or type: `N` to abort the process.
5. Follow the instructions on the menu. When formatting is complete, at the Main menu, press function key f6 - *Quit Format Utility.*

For units that have a SCSI hard drive:

1. Turn on the unit.
2. During the system diagnostic, press CTRL-SHIFT-f8 twice.
3. To select disk debugger, enter `Y` at *BootPROM.*
4. To select the hard drive, enter `M` at *disk-debug.*
5. To change the disk parameters, enter `Y` (yes).
6. For drive number, enter `2` to select the SCSI drive.
7. To format the hard disk, enter `F` (format) at *disk-debug.*
8. Press RETURN twice.

The hard drive LED will illuminate, indicating that formatting is in progress. When the LED light is no longer illuminated, formatting is complete.

After the hard disk is formatted:

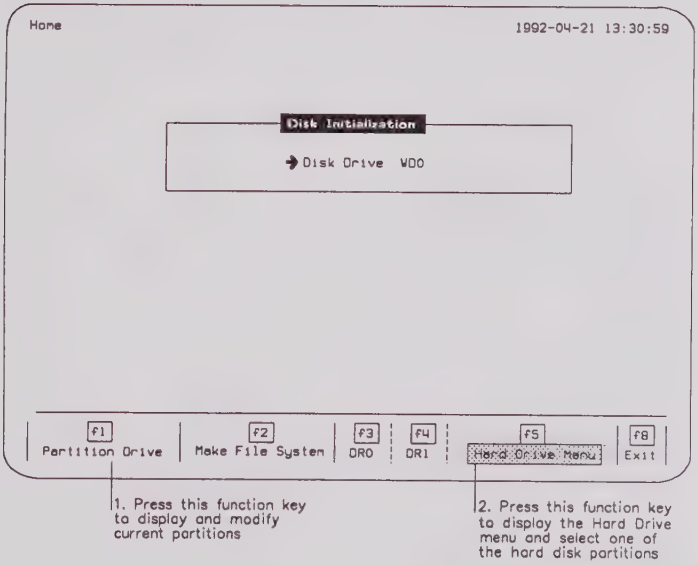
1. Insert the Operating System disks in the floppy drive.
2. Press the RESET button to reboot the tester from floppy.
3. Follow the steps in the next section to partition the hard disk.

To Partition the Hard Disk

Prior to shipping, the hard disk has been divided into four partitions. You can redefine these default partitions and the size of each. This process checks all hard drive partitions to determine if a new size has been assigned to a partition, starting with WD0. **The contents of the first partition found with a size difference, and all subsequent partitions, are deleted**, and default file system names are assigned. Partitions prior to the first one assigned a different size are left unchanged.

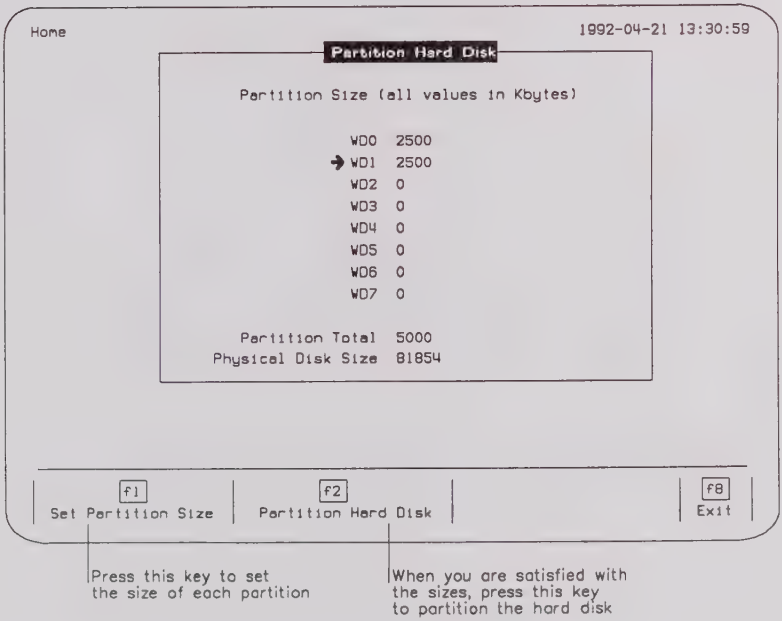
1. Move the topic box to the **Files** topic.
2. Press function key f8 - *OTHERS*.
3. Press function key f3 - *Initialize* to display the Disk Initialization menu.
4. Press function key f1 - *Partition Drive.*
5. Move the cursor to each of the desired partitions and press function key f1 - *Set Partition Size.* Enter the new partition size at the prompt and press RETURN.
6. Once partition sizes are defined, press function key f2 - *Partition Hard Disk.* A warning and a prompt will be displayed.
7. Press function key f7 - *Execute* to continue or function key f8 - *Exit* to quit.

The following display is an example of the Disk Initialization menu and function keys when the last drive selected was a floppy drive.



Example 1:

A customized configuration could require three partitions: one for the Operating System, one for X.25 software, and finally, the largest for data recordings. In this case, set WD0 to 2500 Kbytes, WD1 to 2500 Kbytes, and all others to 0 Kbytes.



In this example, the total of the defined partitions is 5000 Kbytes as displayed at the bottom of the menu. When you partition the hard disk, if the total of the partitions is less than the physical disk size, another partition will be created containing the rest of the disk space. In the example, WD2 is assigned all remaining available space, or approximately 76,000 Kbytes.

Example 2:

For most applications, the default partitions should be sufficient; however, if you are using the tester primarily to run a conformance test suite, you might want to define additional partitions. You should install the executable test suite files on one partition and the data recordings from the conformance tests on another. If you are running more than one test suite, install each suite on a separate partition; this makes it easier to update the software. For a single test suite, you might partition your hard disk as follows.

Partition	Kbytes	Contents
WD0	2000	Operating System software Application Support Libraries software Home Menu software
WD1	7500	Application software
WD2	5000	Test suite files and test cases or Executable test suite
WD3	2000	User-created programs
WD4	10000	Data recordings
WD5	53500	Data recordings

This reserves two partitions for data recordings. It is useful to keep all data recordings from a test campaign on one partition. This allows for two sets of recordings for two different devices under test (DUTs), or for separate runs against the same device.

To Change the File System Name

During the floppy disk initialization process, you created a file system name. Default file system names were automatically assigned when you partitioned the hard disk. You can change the file system name assigned during initialization; this is also a quick way to **delete the contents of a floppy or hard disk partition** without reformatting or repartitioning.

1. Move the topic box to the **Files** topic and press function key f8 - *OTHERS.*
2. Press function key f3 - *Initialize.*
3. To select floppy drive DR0 or DR1 (PT502 only), press the corresponding function key.
   or
   To select a hard drive partition, press the function key labelled *Hard Drive Menu* to display the Hard Drive menu. Move the cursor to the desired partition and press function key f3 - *Select Hard Drive.*
4. Press the function key labelled *Make File System* and enter the new file system name (maximum 14 characters). Press RETURN. A warning message is displayed.
5. Press function key f7 - *Execute* to continue or function key f8 - *Exit* to quit.

Backing up Files

Use the backup function to copy files larger than 790 Kbytes (double density format disks) or 1.4 Mbytes (high density format disks) to floppy disk. The source and destination drives and the filename are specified on the Backup menu. By default, all files will be copied to floppy disk; wildcards are allowed in the filename. When you start backup, the contents of the floppy disk are deleted and the files are copied. As the files are being copied, you can also compare the copy against the original.

During backup, a file named 'DIR.LIST' is created on the first disk which contains a complete list of all files backed up. The file 'VOL.LIST' is created on each disk and contains the backup disk number. Files will be restored in the same order as they are backed up.

To Back up a File

1. Move the topic box to the **Files** topic.
2. Press function key f8 - *OTHERS.*
3. Press function key f4 - *Backup* to display the Backup menu.
4. Press the function key labelled *Hard Drive Menu* to display the Hard Drive menu.
5. Move the cursor to the desired hard drive partition and press function key f3 - *Select Hard Drive.*
6. On the Backup menu, move the cursor to *Destination* and press the corresponding function key to select a floppy drive.
7. Move the cursor to *File Name* and press function key f3 - *Specify File Name.*
8. Enter the new filename at the prompt and press RETURN.
9. Press function key f1 - *Backup* and insert a blank floppy disk in the destination drive. Press function key f7 - *Execute.*

If the specified files require more than one floppy disk, a notice will be displayed indicating that backup is complete on the current disk. To continue with the backup, repeat the following steps until the backup is complete:

1. Press function key f1 - *Continue.*
2. Remove the disk in the destination drive and insert a blank disk in that drive.
3. Press function key f7 - *Execute.*

NOTE
The backup function does not check the format of the destination floppy disk and always operates as though double density disks are being used.

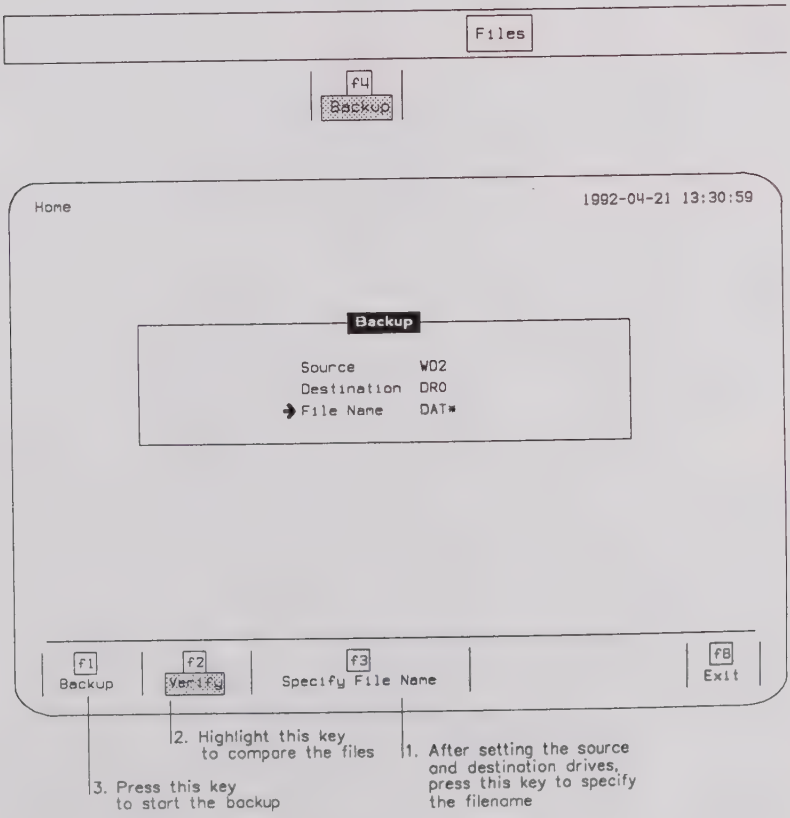
To Compare the Files during Backup

1. Before executing the backup function, on the Backup menu press (highlight) function key f2 - *Verify* (default).

To remove the verify condition, press (unhighlight) function key f2 - *Verify.*

Example:

Back up all files on WD2 that begin with 'DAT' to DR0. Set the tester to verify the files as they are backed up.



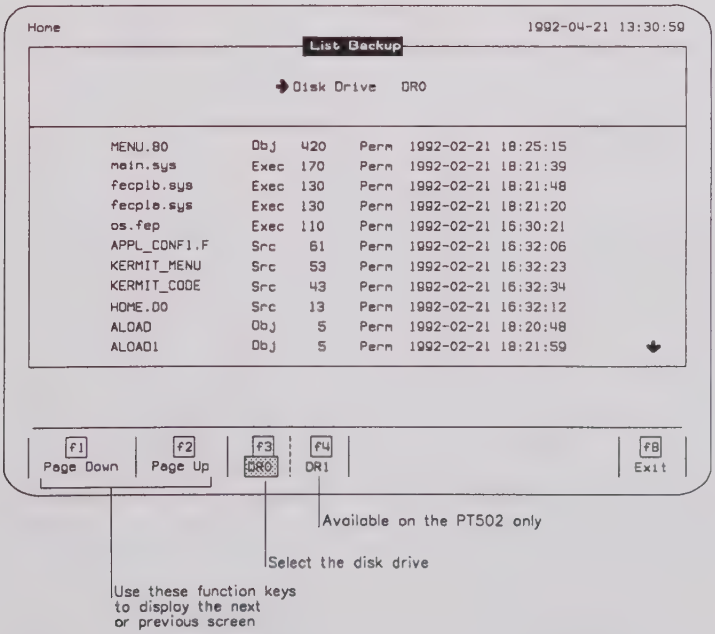
To List Backup Files

The backup procedure, as described in the previous section, creates a file named 'DIR.LIST' on the first backup disk. This file contains a complete list of all files backed up during the session.

1. Insert the first backup disk in a floppy drive.
2. Move the topic box to the **Files** topic.
3. Press function key f8 - *OTHERS*.
4. Press function key f5 - *List Backup* to display the List Backup menu.
5. Press function key f3 - *DR0* or function key f4 - *DR1* (PT502 only) to list backup contents from DR0 or DR1.

Example:

Back up the contents of WD0 to DR0. The backup will probably span at least two disks. Insert the first backup disk in DR0 and list the contents.


Home
1992-04-21 13:30:59
List Backup
Disk Drive DR0
MENU.80 Obj 420 Perm 1992-02-21 18:25:15
main.sys Exec 170 Perm 1992-02-21 18:21:39
fecplb.sys Exec 130 Perm 1992-02-21 18:21:48
fecple.sys Exec 130 Perm 1992-02-21 18:21:20
os.fep Exec 110 Perm 1992-02-21 16:30:21
APPL_CONF1.F Src 61 Perm 1992-02-21 16:32:06
KERMIT_MENU Src 53 Perm 1992-02-21 16:32:23
KERMIT_CODE Src 43 Perm 1992-02-21 16:32:34
HOME.DO Src 13 Perm 1992-02-21 16:32:12
ALOAD Obj 5 Perm 1992-02-21 18:20:48
ALOAD1 Obj 5 Perm 1992-02-21 18:21:59
f1 Page Down
f2 Page Up
f3 DR0
f4 DR1
f8 Exit
Available on the PT502 only
Select the disk drive
Use these function keys to display the next or previous screen

Restoring Backup

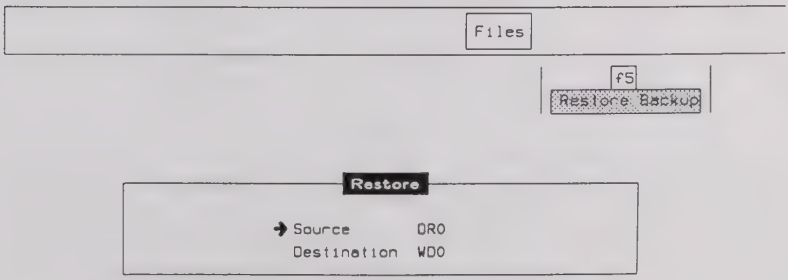
If the hard disk has been initialized, repartitioned, or files have been lost for some other reason, they can be restored from the backup on floppy disk. Disks must be restored in the same order as they were backed up.

To Restore a Single File

1. Move the topic box to the **Files** topic.
2. Press function key f8 - *OTHERS.*
3. Press function key f6 - *Restore Backup* to display the Restore menu.
4. Press function key f3 - *DR0* or function key f4 - *DR1* (PT502 only) to select a floppy drive.
5. Move the cursor to *Destination* and press function key f3 - *Hard Drive Menu* to display the Hard Drive menu. Move the cursor to the desired hard drive partition and press function key f3 - *Select Hard Drive.*
6. On the Restore menu, press function key f2 - *Single File Restore* and enter the filename in the prompt. Press RETURN.
7. Insert the first backup disk in the floppy drive and press function key f7 - *Execute.*

If the specified file is not found on the first backup disk, a notice will be displayed. Repeat the following steps until the file is found and can be restored:

1. Press function key f1 - *Continue.*
2. Remove the disk in the source drive and insert the next backup disk in that drive.
3. Press function key f7 - *Execute.*



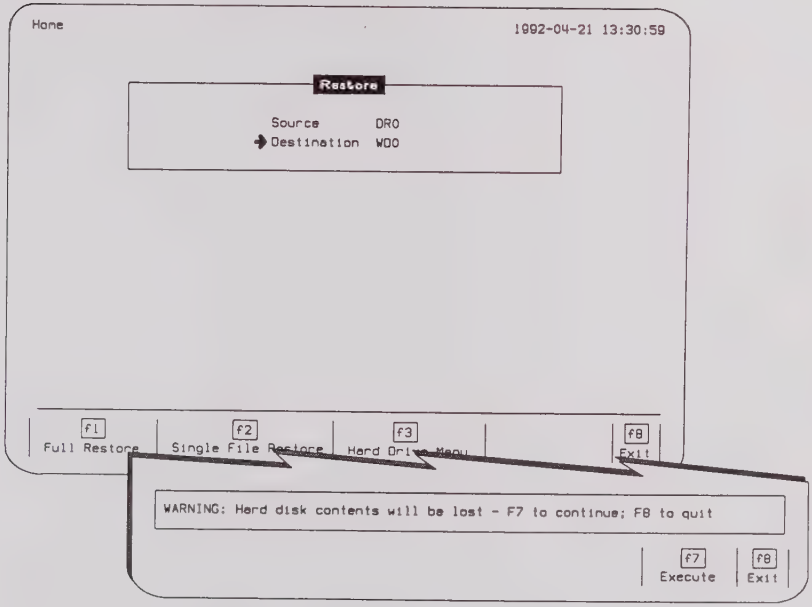
To Restore all Files

Restoring all files **deletes the contents of the destination hard disk partition**.

1. Move the topic box to the **Files** topic.
2. Press function key f8 - *OTHERS*.
3. Press function key f6 - *Restore Backup* to display the Restore menu.
4. Press function key f3 - *DR0* or function key f4 - *DR1* (PT502 only) to select a floppy drive.
5. Move the cursor to *Destination* and press function key f3 - *Hard Drive Menu* to display the Hard Drive menu. Move the cursor to the desired hard drive partition and press function key f3 - *Select Hard Drive*.
6. On the Restore menu, press function key f1 - *Full Restore*. A warning will be displayed indicating that the contents of the hard disk partition will be deleted.
7. Press function key f7 - *Execute* to continue or function key f8 - *Exit* to quit.

Example:

Restore all backed up files to WD0.



7
Printing

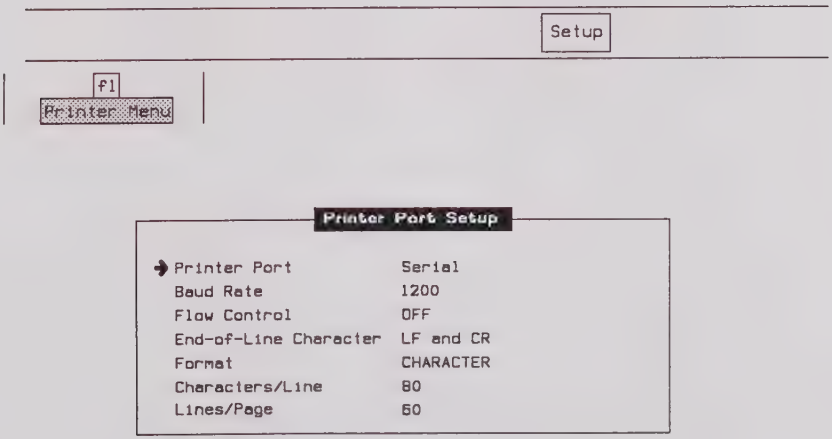
In This Chapter

- *Setting up to Print*
- *Printing Data*

Setting up to Print

Before printing, connect a serial or parallel printer to the back of the tester and ensure that the printer is powered up and online.

The printer and the tester's printer port must be assigned the same configuration settings. This chapter describes how to configure the tester's printer port. For information on configuring the printer, or to determine the printer's current configuration, refer to your printer's user manual.



To Select the Printer Port

1. Move the topic box to the **Setup** topic.
2. Press function key f1 - *Printer Menu* to display the Printer Port Setup menu.
3. Move the cursor to *Printer Port.*
4. Press the corresponding function key to select the printer type.

To Select the Baud Rate

The baud rate is the speed at which the printer is running.

1. Move the cursor to *Baud Rate* on the Printer Port Setup menu.
2. Press function key f1 - *Select Baud Rate* to display the Port Speed menu.
3. Move the cursor to the desired speed and press function key f1 - *Set Printer Port Speed.*
   or
   Press function key f2 - *Modify Speed* and enter the desired speed at the prompt, press RETURN.

To Select Flow Control

Flow control is the method used by a printer to tell the tester when to start or stop sending data. If a printer cannot print data at the same speed as it is received, the printer signals the tester to stop sending data until it prints all previously received data. The printer then indicates that it is ready to continue. Combinations of XON/XOFF, DTR, and CTS/RTS can be selected.

1. Move the cursor to *Flow Control* on the Printer Port Setup menu.
2. Press the corresponding function key to select one of the following flow controls:

f1 - *OFF*
Flow control is not used.

f2 - *XON/XOFF*
Starts/stops transmission to the printer upon reception of XON (hex 13) and XOFF (hex 11), respectively.

f3 - *DTR*
Outputs to the printer while the DTR (CCITT #108) control lead is on.

f4 - *CTS/RTS*
Outputs to the printer while the RTS (CCITT #105) control lead is on.

To Set the Printing Format

Set the following parameters to customize the printing format.

1. Move the cursor to the following parameters on the Printer Port Setup menu.
2. Press the corresponding function key to modify the following status values:

→ *End-of-Line Character*
Depending on your printer's configuration, an end-of-line character may be required. If the entire printout is on one line, the end-of-line character is required and should be set to LF and CR (linefeed and carriage return). If the printout is double-spaced, an unnecessary line feed is being sent. Set the end-of-line character to NONE or to CR.

f1 - *NONE*
No end of line character is outputted.

f2 - *CR*
Outputs a carriage return (hex 0D) at the end of each line.

f3 - *LF and CR*
Outputs both a carriage return and a line feed (hex 0A) at the end of each line.

→ *Format*

f1 - *RAW*
Outputs all characters without conversion.

f2 - *CHARACTER*
Translates all non-printable characters into hex.

f3 - *HEX*
Translates all characters into hex.Characters translated into hex are enclosed in angle brackets (i.e. 'ABSHC' prints as 'AB<01>C').

→ *Characters/Line*
Specifies the maximum number of characters/line before sending an end-of-line character (default is 80).

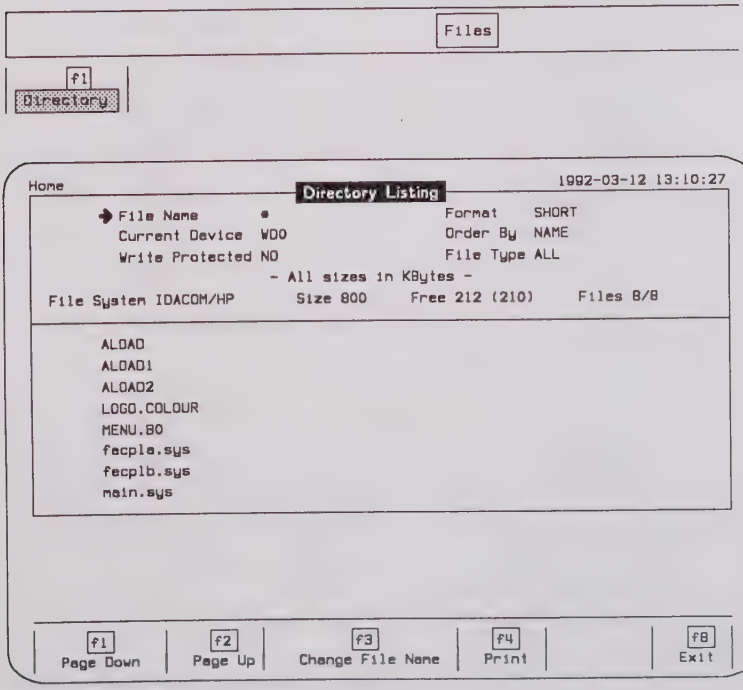
→ *Lines/Page*
Specifies the maximum number of lines per page before advancing to the next page (default is 60).

Printing Data

Both display listings and source files can be printed. To print data files, refer to the specific application user manual. Note, that when printing data, do not move to another topic until printing is complete.

To Print a Directory Listing

1. Move the topic box to the **Files** topic.
2. Press function key f1 - *Directory* to display the Directory Listing menu.
3. Press the *Print* function key. It is available when the cursor is on any of the directory listings. The location of the function key varies depending on the position of the cursor.

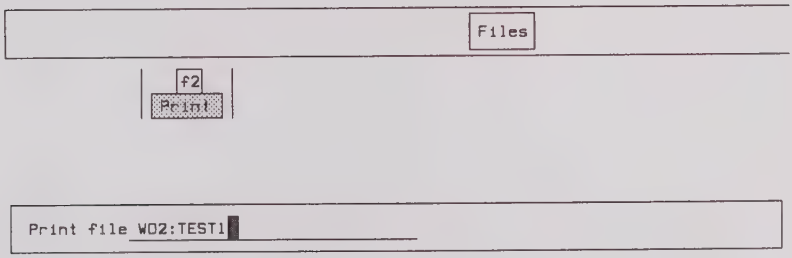


To Print Source Files

1. Move the topic box to the **Files** topic.
2. Press function key f2 - *Print*.
3. Enter the device and filename to be printed. Press RETURN.

Example:

Print the file 'TEST1' on WD2.



8
Using the Editor

In This Chapter

- *Editing a File*
- *Exiting the Editor*

Built into the Home Menu application, under the **Files** topic, is an editor. The editor can be used to create, modify, and read ASCII files.

Editing a File

To Create a New File

A file can be no longer than 408 lines in length, unless the tester has more than 360 Kbytes free; in this case a file can be up to 2000 lines in length.

1. Move the topic box to the **Files** topic.
2. Press function key f3 - *Edit.*
3. Press function key f1 - *Clear* to clear the field.
4. Press RETURN. A blank edit window will be displayed.

To Open an Existing File

1. Move the topic box to the **Files** topic.
2. Press function key f3 - *Edit.*
3. Enter the desired filename at the prompt and press RETURN. If a drive is not specified, the file will be searched for on all floppy and hard disk partitions.

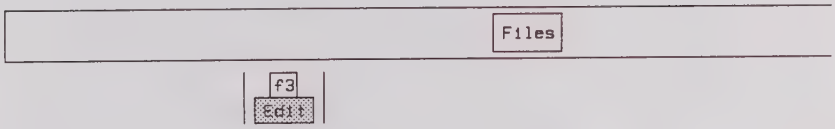
   or

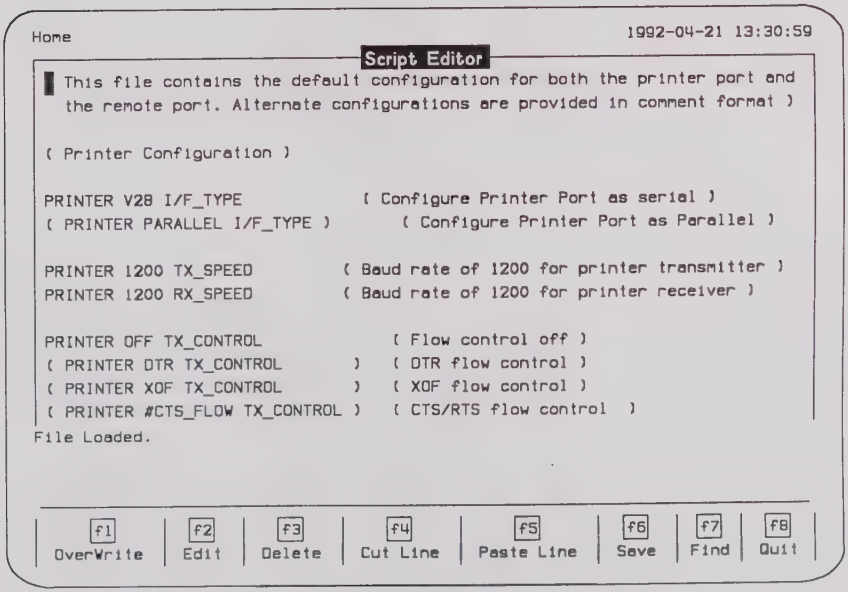
1. Move the topic box to the **Files** topic.
2. Press function key f1 - *Directory.*
3. Move the cursor to the desired file.
4. Press function key f3 - *Edit File.*

NOTE
A new file can be loaded without exiting the editor. Press function key f2 - Edit, enter the new filename, and press RETURN. If the previous file was not saved, all changes will be lost.

Example:

Open the HOME.D0 configuration file on WD0.




Home
1992-04-21 13:30:59
Script Editor
This file contains the default configuration for both the printer port and the remote port. Alternate configurations are provided in comment format)
(Printer Configuration)
PRINTER V28 I/F_TYPE (Configure Printer Port as serial)
(PRINTER PARALLEL I/F_TYPE) (Configure Printer Port as Parallel)
PRINTER 1200 TX_SPEED (Baud rate of 1200 for printer transmitter)
PRINTER 1200 RX_SPEED (Baud rate of 1200 for printer receiver)
PRINTER OFF TX_CONTROL (Flow control off)
(PRINTER DTR TX_CONTROL) (DTR flow control)
(PRINTER XOF TX_CONTROL) (XOF flow control)
(PRINTER #CTS_FLOW TX_CONTROL) (CTS/RTS flow control)
File Loaded.
f1 OverWrite
f2 Edit
f3 Delete
f4 Cut Line
f5 Paste Line
f6 Save
f7 Find
f8 Quit

To Scroll in a File

- To move to the end or beginning of the line, press the CTRL key along with the → or ← cursor key.
- To move to the last or first character position on the line (position 80 or 1), press and hold down both the SHIFT and CTRL keys along with the → or ← cursor key.
- The TAB key can also be used to move quickly to the right on blank lines. If the line is not blank, highlight function key f1 - *Overwrite* before using the TAB key to move across the text.
- To move up or down one line, press the ↑ or ↓ cursor key.
- To scroll up and position the current line at the bottom of the screen, or scroll down and leave the current line at the top of the screen, press and hold down the SHIFT key along with the ↑ or ↓ cursor key.
- To page up or down, press and hold down the CTRL key along with the ↑ or ↓ cursor key. On the PT editor, one page contains 15 lines.
- To move to the top or bottom of the file, press and hold down both the SHIFT and CTRL keys along with the ↑ or ↓ cursor key.

NOTE
Keys repeat after a one or two second delay.

To Insert or Overwrite Text

- Press (highlight) function key f1- *Overwrite* to enter overwrite mode. Characters will be replaced on the line to the right of the cursor.
  or
- Press (unhighlight) function key f1- *Overwrite* to enter insert mode (default). Characters will be inserted to the left of the cursor.

To Insert a Control Character

- Press the '\' key, then the CTRL key, followed by the desired control character.

NOTE
This is used for characters A to Z (or a to z) but is not required for the arrow keys.

To Insert the Pilcrow Character

The pilcrow character, ¶, indicates the end of a file in files used with the FILE->BUFFER command. (See the application programmer's manuals for a description of FILE->BUFFER.)

- Hold down the CTRL key and press the 'p' key to insert a pilcrow character.

To Delete Text

- To delete a character, move the cursor over the desired character and press function key f3 - *Delete*, or press the DEL key.
- To delete characters to the left of the cursor, press the BS (backspace) key.
- To delete a line, press function key f4 - *Cut Line.* The deleted line is stored in a one line buffer.

To Copy a Line

1. Move the cursor to the desired line.
2. Press function key f4 - *Cut Line.* The deleted line is saved in the cut buffer.
3. Press function key f5 - *Paste Line* to replace the line that was just deleted.
4. Move the cursor to where the line is to be inserted.
5. Press function key f5 - *Paste Line.*

To Join Two Lines

- Place the cursor at the beginning of the second line and press the BS (backspace) key. This will have no effect if the two combined lines exceed the 80 character maximum line length.

NOTE
When joining lines, a space is inserted between the last character of the first line and the first character of the merged line

To Search and Replace a String

The search function searches forward through a file. When the end is reached, it will wrap around and continue searching from the beginning again.

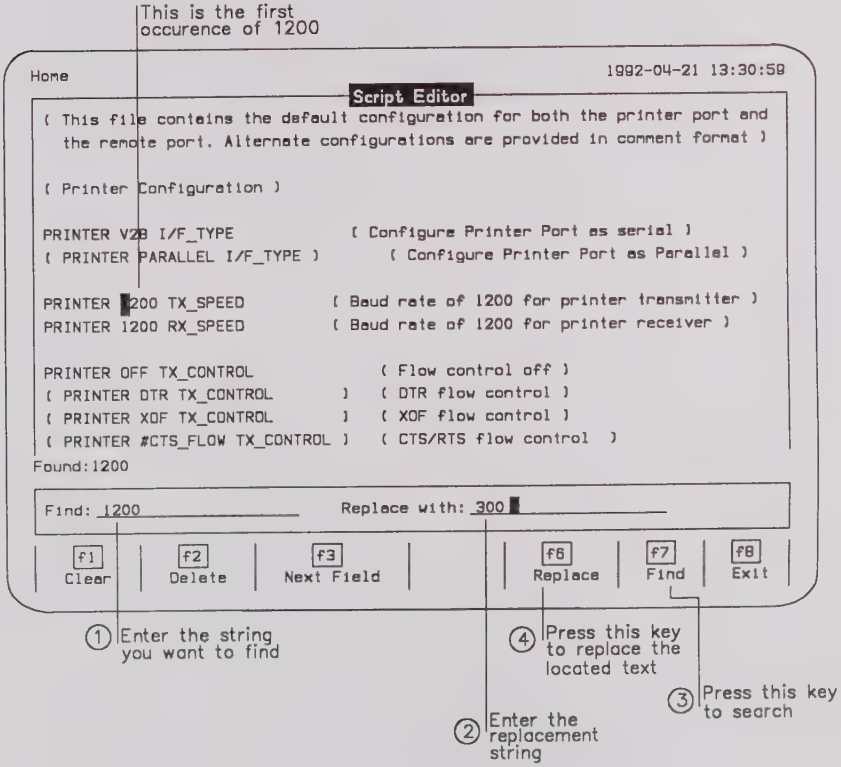
1. Press function key f7 - *Find* to search for a string.
2. Enter the desired string in the first field and press function key f3 - *Next Field.*
3. Enter the replacement string and press function key f7 - *Find.*
4. Press function key f6 - *Replace* to replace the located string. This key can be used to repeatedly insert a sequence of characters.
5. Press function key f8 - *Exit* to exit the prompt.

Steps 4 and 5 can be repeated to find and replace all occurrences of a given string.

NOTE
If you are searching for a string but do not wish to replace it, leave the replace field blank, but be careful not to press function key f-6 Replace or you will delete characters from the file.

Example:

In the HOME.DO file, change the printer speed (transmitter and receiver) from 1200 to 300 using the search and replace function.


This is the first occurence of 1200
Home
1992-04-21 13:30:58
Script Editor
(This file contains the default configuration for both the printer port and the remote port. Alternate configurations are provided in comment format)
(Printer Configuration)
PRINTER V28 I/F_TYPE (Configure Printer Port as serial)
(PRINTER PARALLEL I/F_TYPE) (Configure Printer Port as Parallel)
PRINTER 1200 TX_SPEED (Baud rate of 1200 for printer transmitter)
PRINTER 1200 RX_SPEED (Baud rate of 1200 for printer receiver)
PRINTER OFF TX_CONTROL (Flow control off)
(PRINTER DTR TX_CONTROL) (DTR flow control)
(PRINTER XOF TX_CONTROL) (XOF flow control)
(PRINTER #CTS_FLOW TX_CONTROL) (CTS/RTS flow control)
Found:1200
Find: 1200
Replace with: 300
f1 Clear
f2 Delete
f3 Next Field
f6 Replace
f7 Find
f8 Exit
1 Enter the string you want to find
2 Enter the replacement string
3 Press this key to search
4 Press this key to replace the located text

To Display Line Numbers

1. In the Editor, press function key f2 - *Edit*.
2. Press function key f3 - *Line #'s* to display the numbers. When displaying line numbers, the text is shifted right 4 character spaces so that the last 4 characters on the line will not be visible. Hold down the SHIFT and CTRL keys and press → to display any hidden characters.
3. Press function f8 - *Exit* to return to the editor function keys.

WARNING
Do not press the RETURN key or f7 - Execute or the specified file will be reloaded and any changes will be lost.

To Save Changes

Save changes often to avoid losing work.

1. Press function key f6 - *Save*.
2. Press the RETURN key.

or

1. Press function key f6 - *Save*.
2. Enter a new filename in the prompt to save the modified file under a different name.
3. Press the RETURN key.

NOTE
When creating a new file based on an existing file, load the existing file into the editor and save the file with a new name. This way the new filename will appear in the save prompt, and the first file will not be accidentally overwritten when the modified file is saved.

To Create a Backup File

After modifying a file, a copy can be made of it as it existed as of the last save. This can be done by saving the current editing session under the original filename, and renaming the original file.

1. Press function key f6 - *Save.*
2. Highlight function key f4 - *Backup.*
3. Press function key f3 - *Next Field* to move to the 'Backup to:' field.
4. Enter the desired backup filename.

To back up the current editing session under a new filename, see section 'To Save Changes' on page 8-8.

Exiting the Editor

If any changes have been made to the file since the last save, the following warning message will be displayed:

```
File has not been saved since last change.
```

- Press function key f1 - *Save then Quit* or press function key f2 - *Quit without Saving.*

Pressing the HOME key exits the editor without the option of saving any changes (use this key with caution). If you exit via the HOME key, the edit session can be resumed without losing changes; this must be done immediately or changes will be lost.

1. Move the topic box to the **Files** topic.
2. Press function key f3 - *Edit.*
3. Press function key f6 - *Resume.*

WARNING

When resuming an edit session, DO NOT press function key f7 - 'Execute' or the RETURN key. If these keys are accidentally pressed, the file specified in the prompt is searched for resulting in the loss of all edits in the file being edited.

9

Checking the Status of the PT302/PT502

In This Chapter

- *Displaying the Configuration Diagram*
- *Displaying the Application Processor Status*

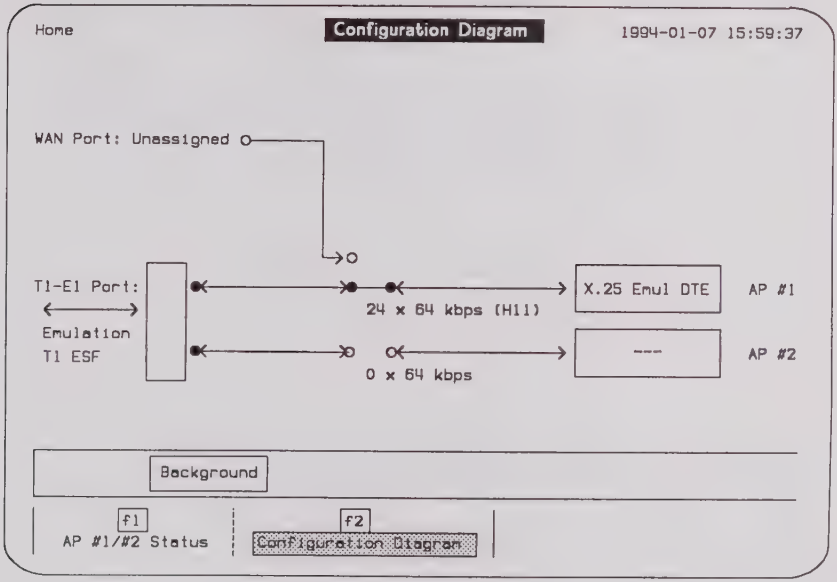
The HOME processor maintains status information on the system configuration as well as the activity of the application processors. The current status of the PT302/PT502 can be displayed by changing the background screen display to Configuration Diagrams or one of the Application Status backgrounds.

Displaying the Configuration Diagram

The Configuration Diagram is a graphical representation of the current status of the PT302/PT502. Depending on the type of machine you have, the Configuration Diagram may not be displayed exactly as shown below. The following illustration is an example of the Configuration Diagram for a Dual WAN machine type.

To Display the Configuration Diagram

1. Move the topic box to the **Background** topic.
2. Press function key f2 - *Configuration Diagram.*


Home
Configuration Diagram
1994-01-07 15:59:37
WAN Port: Unassigned
T1-E1 Port:
Emulation
T1 ESF
24 x 64 kbps (H11)
0 x 64 kbps
X.25 Emul DTE

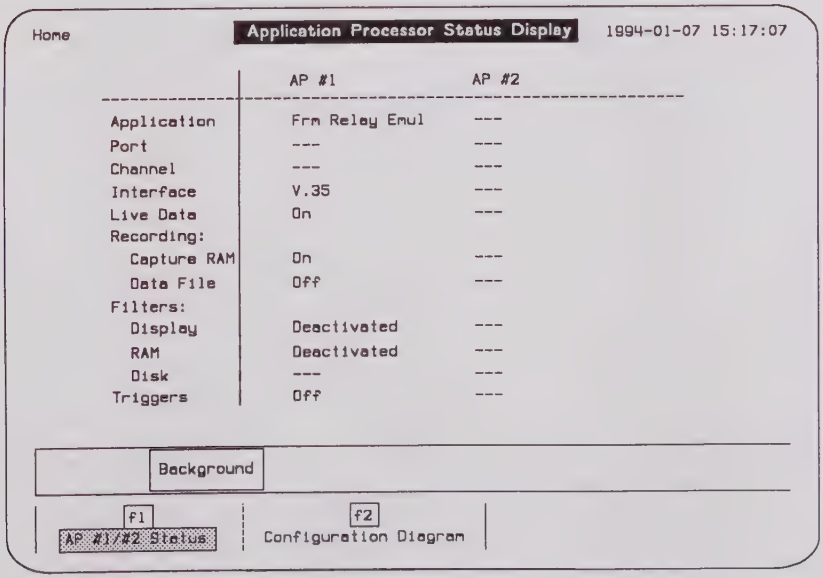
AP #1
AP #2
Background
f1
AP #1/#2 Status
f2
Configuration Diagram

Displaying the Application Processor Status

The Application Processor Status Display provides a dynamically updated overview of the application processor activities. Depending on the type of machine you have, the Application Processor Status may not be displayed exactly as shown below. The following illustration is an example of the Application Processor Status for a T1-E1 and WAN machine type.

To Display the Application Processor Status Screen

1. Move the topic box to the **Background** topic.
2. Press function key f1 - *AP #1/#2 Status.*



10
Switching to Another Processor

In This Chapter

- *Switching to the HOME Processor*
- *Switching to an Application Processor*

Switching to the HOME Processor

There are two different ways to switch to the HOME processor from any application processor.

- Press the HOME key on the keyboard. If a menu is still displayed, press function key f8 - *Exit* or the HOME key to close the menu and display the topic bar.

  or

- Move the topic box to the **TestPorts** topic and press function key f8 - *HOME*.

Switching to an Application Processor

You can switch to an application processor, on which an application has been loaded, from the **TestPorts** topic on the HOME processor. The available selections may be different depending on the type of machine you have.

1. Move the topic box to the **TestPorts** topic.
2. Press the function key that corresponds to the processor to which you want to switch.

11
Using Command Mode

In This Chapter

- *Entering Command Mode*
- *Modifying the Output Window*
- *Executing Commands*
- *Problems?*

The default mode of operation of the PT302/PT502 is menu mode, which provides an easy-to-use interface of multiple window displays, menus, and topics with function key control. Command mode can be used to type on the command line directly without entering a specific topic or menu. The screen display is automatically updated to reflect any changes resulting from the entered command.

Before using command mode, you should become familiar with the use of the Interactive Test Language (ITL); refer to the Programmer's Reference Manual.

All commands available for use in test scripts can be entered in command mode. This is a useful debugging tool that takes advantage of the interactive nature of ITL. If a problem is suspected in a section of code in a test script, use command mode to execute the instructions. The stack and contents of variables can be examined after each instruction is executed to verify the expected values.

The control structures (for example, DO LOOP, IF ELSE, ENDIF) cannot be executed interactively. They can only be used within a stated word definition. Therefore, when an IF ELSE ENDIF occurs in code, print out the top value on the stack. If it is not zero, execute the commands in the IF section. If it is zero, execute the commands from the ELSE section. A similar technique can be used to debug code containing other control structures.

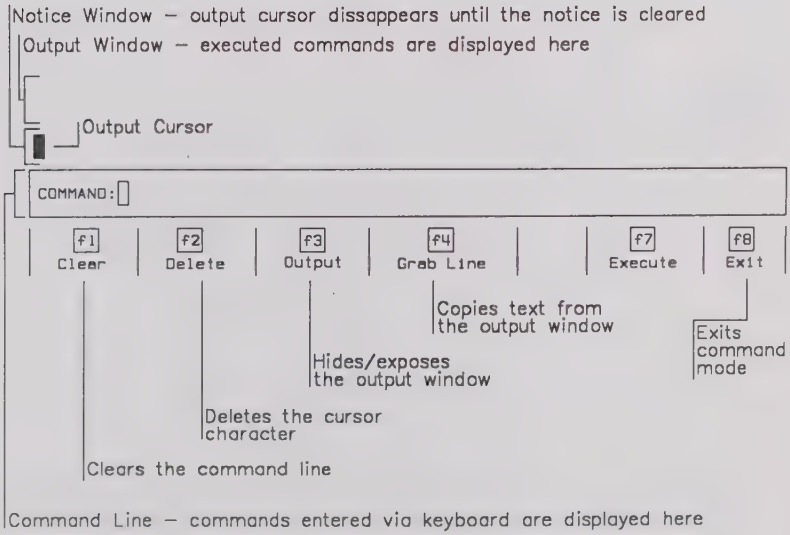
Entering Command Mode

The screen display and keyboard are controlled by the current processor and all entered commands are executed on that processor. Command mode is available on all processors.

To Enter Command Mode

- Press the ESC key to display the command line, associated function keys, and output window.

To exit command mode and return to menu mode, press function key f8 - *Exit* or press the ESC key.


Notice Window – output cursor dissappears until the notice is cleared
Output Window – executed commands are displayed here
Output Cursor
COMMAND:
f1 Clear
f2 Delete
f3 Output
f4 Grab Line
f7 Execute
f8 Exit
Copies text from the output window
Exits command mode
Hides/exposes the output window
Deletes the cursor character
Clears the command line
Command Line – commands entered via keyboard are displayed here

Modifying the Output Window

The default size of the output window is three lines. Each executed command is displayed at the bottom of this window. As new commands are executed, the previous command scrolls upwards. The size of the output window can be changed to a maximum of 7 lines and a minimum of zero lines. The output window can also be hidden.

To Change the Size of the Output Window

1. Position the cursor in the output window.
2. Hold down the SHIFT key and press the ↑ or ↓ cursor keys to expand or shrink the output window.

To Hide the Output Window

- Press (unhighlight) function key f3 - *Output* to hide the output window.

To expose the output window, press (highlight) function key f3 - *Output*.

Executing Commands

General commands are described in the Programmer's Reference Manual. Protocol-specific commands can be found in the respective programmer's manuals.

To Execute a Command

1. Enter the command on the command line.
2. Press RETURN. The text on the command line is copied to the bottom of the output window and the command line is cleared. If the command is unknown, it is displayed in the notice window followed by the '?' character.

When the RETURN key is used to execute a command, the stack can be used to pass parameters between commands or as temporary storage in the same way as the stack is used within programs. This is particularly useful when a command is longer than one line or when debugging test scripts.

If function key f7 - *Execute* is used to execute a command, the entered command is not allowed to change the stack, no values can be left behind, and no values can be removed from the stack. If it is used and the stack is changed, the following message will appear:

```
Action code damaged the stack.
```

Re-execute the command via the RETURN key.

NOTE
Refer to Section 1.1 of the Programmer's Reference Manual for an explanation of the stack and its usage.

Example:

Using command mode in X.25, play back a data file with the filename 'DAT' from partition WD3. Refer to the X.25 Programmer's Manuals for command descriptions.

```
COMMAND: HALT " WD3:DAT" =TITLE FROM_DISK PLAYBACK
```

To Delete Text from the Command Line

- To delete a character, move the cursor to the desired character and press function key f2 - *Delete*, or move the cursor to the right of the character to be deleted and press the backspace key.
- To delete an entire line, press the function key f1 - *Clear*.

To Copy Text from the Output Window

To repeat or edit a previously executed command, copy the command from the output window.

1. Position the output cursor to the right of the command to be copied.
2. Press function key f4 - *Grab Line* to copy the command to the command line.

Problems?

If the Stack is Empty

If the stack is empty, the following message will be displayed, indicating that insufficient input parameters were used:

```
Stack Empty?  ( message display here )
```

To solve this problem

- Re-execute the command with correct input parameters.

NOTE
The system will automatically clear the stack.

If Unexpected Numbers are Displayed in the Output Window

If the STACK command is used and numbers are displayed in the output window when none were expected, too many input parameters were entered or output parameters were not removed.

To solve this problem

- First restore the stack to normal by using the DROP command to remove the last value displayed. If several values are displayed, clear the entire stack by using the SP! command.

WARNING
The SP! command should never be used within a program or a test script.

12

Transferring Files Using FILEX

In This Chapter

- *Configuring the Tester*
- *Configuring the Host System*
- *Starting Terminal Emulation*
- *Transferring Files*
- *Stopping Terminal Emulation*
- *Ending Your FILEX Session*

FILEX provides terminal emulation and file transfer capabilities via the modem port. FILEX can be used to communicate with another tester/computer. Four basic steps must be accomplished before transferring files.

1. Configure the tester.
2. Configure the host system.
3. Physically connect a host computer/tester to the modem port of the tester.
4. Start terminal emulation.

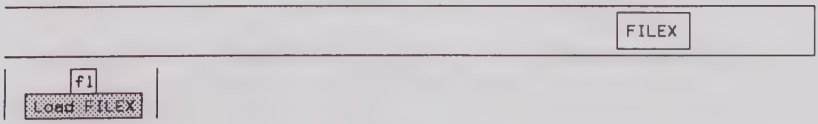
Configuring the Tester

Although FILEX is compiled on the Home Menu software, the application must be loaded and the parameters changed to communicate with another computer. FILEX can be unloaded after you are finished transferring files to conserve memory.

The modem port must be configured to match the baud rate of the other tester/computer. Flow control must be turned off before transferring files. FILEX automatically turns remote interpret off; this should be left off during the connection. You can change the FILEX parameters and save them from the FILEX Configuration menu using the available function keys; or you can add FILEX commands to your FILEX_SETUP.F configuration file, which is executed when FILEX is loaded. Refer to the Programmer's Reference Manual for a description of available commands.

To Load FILEX

1. Move the topic box to the **FILEX** topic.
2. Press function key f1 - *Load FILEX.*

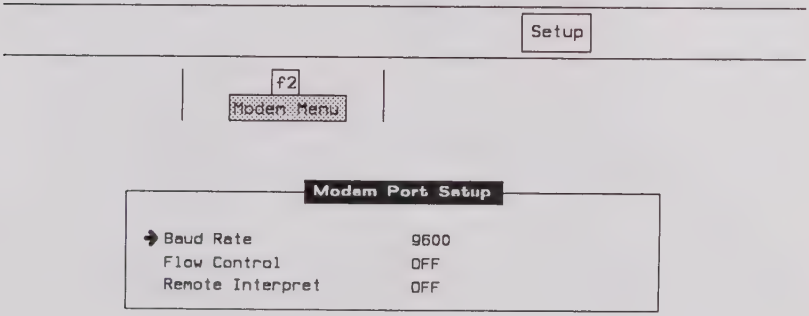


As soon as FILEX is loaded, function key f1 - *Unload FILEX*, function key f2 - *Menu*, and function key f3 - *Terminal* are displayed.

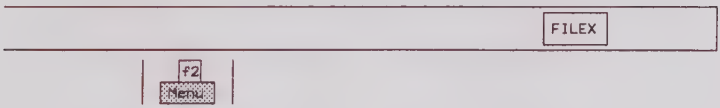
NOTE
If PTKermit is loaded, unload it before loading FILEX.

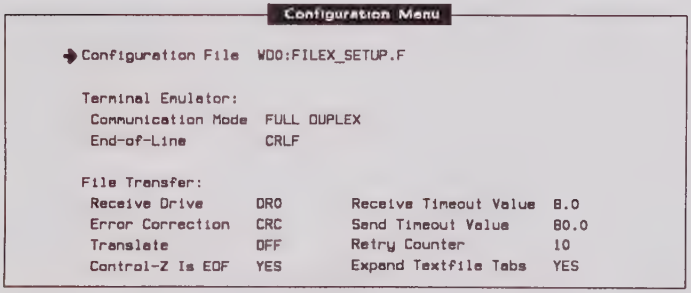
To Configure the Modem Port

1. Move the topic box to the **Setup** topic.
2. Press function key f2 - *Modem Menu* to display the Modem Port Setup menu.
3. Move the cursor to *Baud Rate* and press function key f1 - *Select Baud Rate* to display the Port Speed menu.
4. Move the cursor to the desired speed and press function key f1 - *Set Modem Port Speed*. Press *Exit* to return to the Modem Port Setup menu.
5. Move the cursor to *Flow Control* and press function key f1 - *OFF*.
6. Move the cursor to *Remote Interpret* and press function key f1 - *OFF*.



To Configure the Terminal Emulation for File Transfer





Terminal Emulator:

→ *Communication Mode*

f1 - *HALF DUPLEX*

Locally echoes keyboard input to the terminal emulation screen. In half duplex mode, local keyboard input is displayed in green and remote input in white.

f2 - *FULL DUPLEX* (default)

Keyboard input is not locally echoed to the terminal screen. The host must be set up to echo the keyboard input back to the terminal.

→ *End-of-Line*

When sending files from the tester, end-of-line markers are added and IDACOM character attributes are removed. When receiving files on the tester, end-of-line markers are replaced with blank character padding and character attribute bytes are added.

f1 - *CR*

Sends a carriage return to the host when the RETURN key is pressed.

f2 - *CRLF* (default)

Transmits both a carriage return and a linefeed character to the host computer when the RETURN key is pressed.

File Transfer:

→ *Receive Drive*
Specifies on which device to store files received over the modem port (default is DR0).

→ *Error Correction*
Selects whether the XMODEM error correction scheme is CHECKSUM or CRC (default) when transmitting/receiving a file over the modem port.

→ *Translate*
Selects whether files are translated as they are transferred (default is *OFF* - no translation). *Translate* should only be used when transferring ASCII files between a tester and a computer. When sending files from one tester to another, *Translate* should be set to *OFF* on both machines as no format conversion is required.

→ *Control-Z Is EOF*
Selects whether control-Z (hex 1A) is the end-of-file marker (default) for files received by the tester. If set to *YES*, any characters after control-Z will be discarded. This must be set to *NO* when transferring binary files.

→ *Receive Timeout Value*
Specifies the time, in tenths of seconds, the tester waits for another computer to transmit a data packet during a receive file transfer (default is 8 seconds).

→ *Send Timeout Value*
Specifies the time, in tenths of seconds, the tester waits for another computer to acknowledge after transmitting a data packet (default is 80 seconds).

→ *Retry Counter*
Specifies the number of times to retransmit a data packet after receiving no acknowledgement (default is 10 retries). The interval between retransmissions during a receive file transfer is specified under *Receive Timeout Value.*

NOTE
Receive Timeout Value, Send Timeout Value, and Retry Counter should be set accordingly to accommodate modems with a slow or erroneous transmission system.

→ *Expand Textfile Tabs*
Selects whether tabs are expanded when receiving ASCII text files. Select YES if the file being transferred is a script file created under UNIX or MS-DOS® and which uses TAB characters for alignment of text. When set to YES, each incoming TAB character causes ASCII SPACE characters to be inserted into the received file sufficient to advance to the next tab stop. Tab stops occur every 8 characters, which is the default for both UNIX and MS-DOS®. Select NO if the text originates from another PT, or if it contains literal TAB characters that must be preserved (for example, within a search string). When set to NO, ASCII TAB characters are inserted into the received file like any other character. TAB characters can be seen directly in the PT Editor as a small "HT" symbol.

To Save and Restore Configuration Settings

→ *Configuration File*
The specified file must be in ITL source code format.

f1 - *Save Configuration File*
Saves the current configuration parameters in the specified source file (default is WD0:FILEX_SETUP.F). These source files can then be edited and the values modified.

f2 - *Restore Configuration File*
Restores the configuration parameters from the specified source file. The current configuration is replaced.

NOTE
When loading FILEX, the file FILEX_SETUP.F is automatically loaded. If you have saved a configuration under a different filename, you have to restore it after loading FILEX.

Configuring the Host System

The following termcap file entry is required to use the IDACOM FILEX terminal emulation with a UNIX® system. This termcap entry must be invoked and the number of rows set to 15 (refer to UNIX® man pages tset and termcap).

To Configure the Host System

```
i0|ida-pt|idacom pt vt100 terminal emulator:\
     :do=^J:co#80:li#15:cl=\E[;H\E[2J:sf=\ED:\
     :le=^H:bs:am:cm=\E[%i%d;%dh:nd=\E[C:up=\E[A:\
     :ce=\E[K:cd=\E[J:so=\E[7m:se=\E[m:ue=\E[m:\
     :md=\E[1m:mr=\E[7m:me=\E[m:is=\E[1;15r\E[15;1H:\
     :ks=\E[?1h\E=:ke=\E[?1l/E>:\
     :ku=\EOA:kd=\EOB:kr=\EOC:k1=\EOD:kb=^H:\
     :ho=\E[H:pt:sr=\EM:\
     :sc=\E7:rc=\E8:cs=\E[%i%d;%dr:
```

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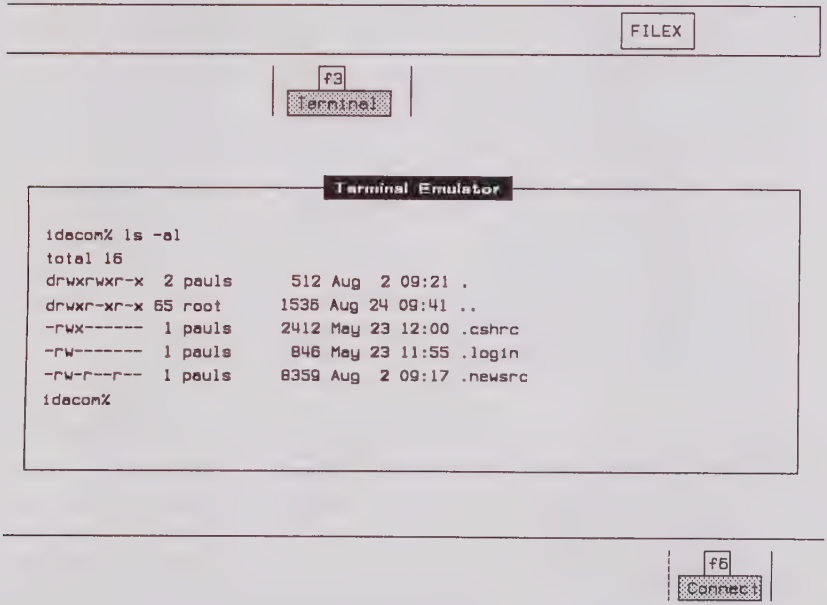
Starting Terminal Emulation



In half duplex mode, all keyboard entries except the ESC and HOME keys, are processed and displayed on the terminal emulation screen. Enter '\' followed by the ESC key to transmit an ESC character.

If the HOME key or the *Exit* function key is pressed, the Home Menu will be displayed and terminal emulation will continue in the background. Entries received from the modem port will still be treated as terminal input; local keyboard entries will not.

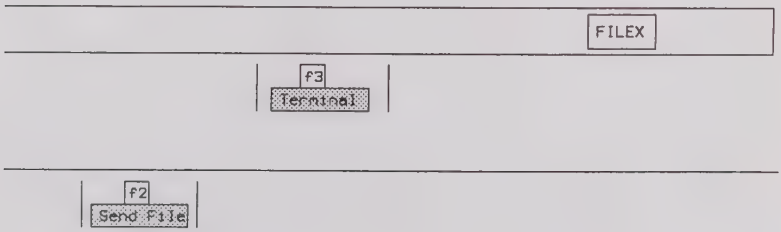
Transferring Files

Before you start transferring files, you must start terminal emulation. At that point you can either send or receive files or send a break signal. When you finish transferring files, stop terminal emulation.

To Send Files

Disk files can be transmitted from the tester through the modem port to a remote computer. Wildcard characters are permitted within the filename to transfer multiple files.

The remote computer must use the XMODEM protocol to receive files. The source file on the tester is unaffected by the file transfer.

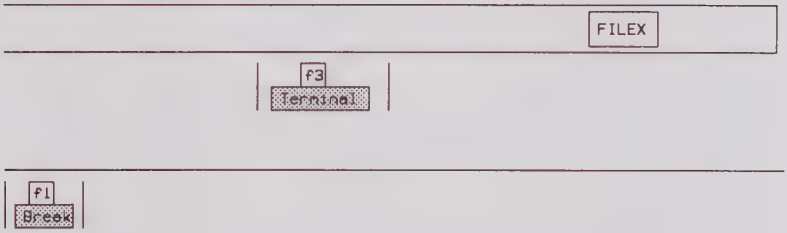


Example:
Transmit the file WD1:TEST1.

- Specify the device and filename (WD1:TEST1) and press ↵ (RETURN).

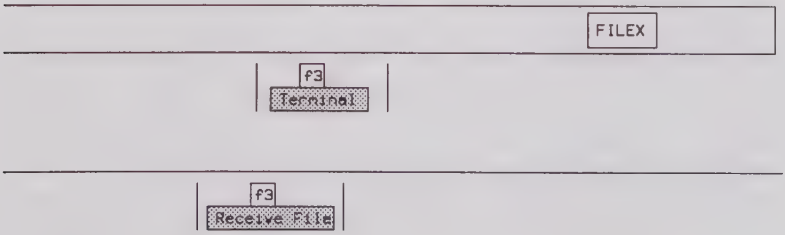
To Send a BREAK Signal

The effect of a BREAK signal varies depending on the connected computer. On some systems, a break signal will cause the currently executing task to be aborted.



To Receive Files

Files received from a remote computer through the modem port can be stored on the tester. If the specified file already exists on the destination drive, the old file will be overwritten. If the destination filename is not specified, a filename will automatically be assigned by the tester. For files transferred between two testers (with *Translate* set to *OFF*), the source filename is used as the destination filename. Other files are assigned the filename 'USER.nn', where 'nn' is a unique and sequential number.



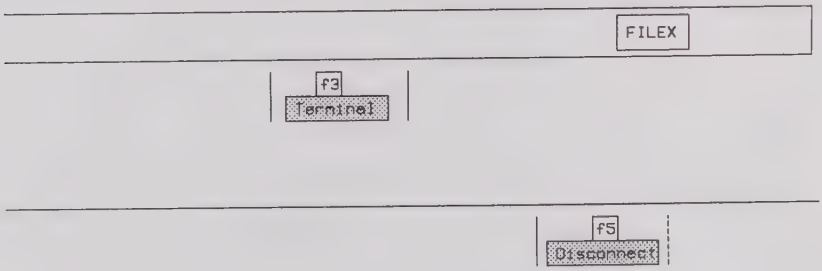
Example:
Store a received file in the file 'TEST1'.

- Specify the destination filename (TEST1) and press ↵ (RETURN).

```
Enter destination filename: TEST1
```

Stopping Terminal Emulation

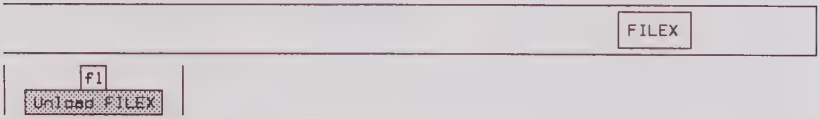
Terminal emulation must be disconnected to release control of the modem port and keyboard (keyboard and remote port entries are not treated as terminal input).



Ending Your FILEX Session

To Unload FILEX from the Tester:

1. Move the topic box to the **FILEX** topic.
2. Press function key f1 - *Unload FILEX.*



13
Transferring Files Using PTKermit

In This Chapter

- *Connecting to the Host Computer*
- *Configuring the Host Computer*
- *Configuring the Tester*
- *Using Remote Commands*
- *Transferring Files*
- *Ending your Kermit Session*
- *Problems?*

PTKermit is an implementation of Columbia University's Kermit (C-Kermit*) file transfer protocol. It provides basic transfer of binary and text files between an HP PT302/PT502 and a personal computer, workstation, or mainframe that also runs Kermit.

PTKermit provides services in response to requests from the host computer; PTKermit does not provide terminal emulation and cannot initiate a file transfer. You must have an interactive Kermit implementation running on a host computer.

This chapter describes how to transfer files assuming you are running C-Kermit on a UNIX® host; similar instructions apply to most Kermit implementations. There are four basic steps that must be accomplished to transfer files using Kermit:

1. Physically connect the host computer to the modem port of the tester.
2. Configure the host computer.
3. Configure the tester to match the host computer.
4. Start transferring files.

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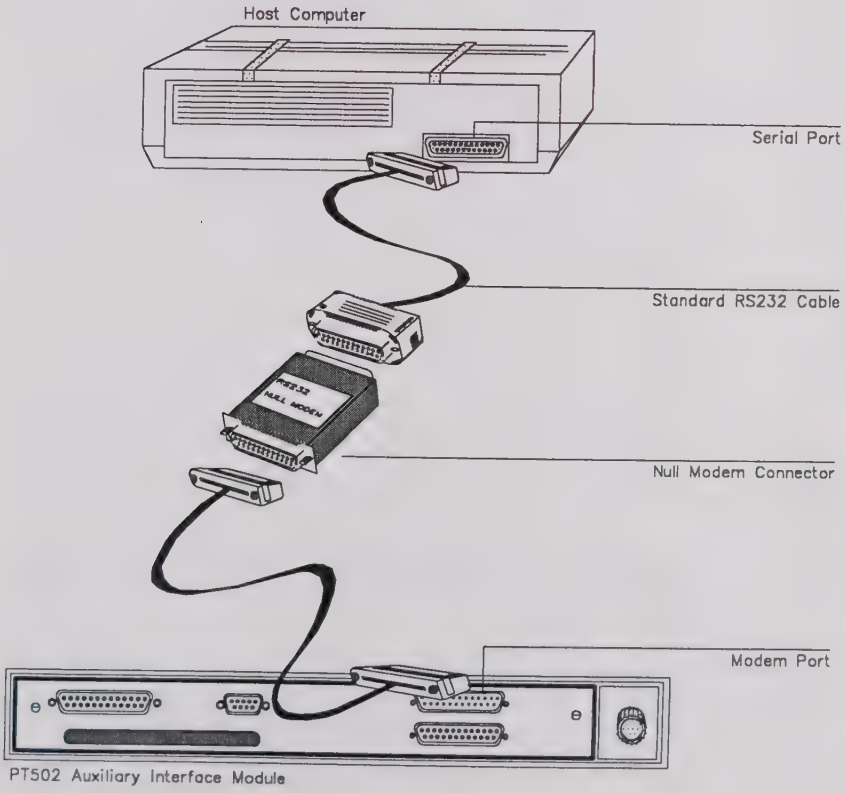
Connecting to the Host Computer

Plug a standard RS-232 cable with a null modem connector between the serial port of the host computer and the modem port of the tester (or use a null modem cable). A null modem cable is a regular RS-232 cable with the following signals swapped between the ends: RD and TD, and RTS and CTS.



Configuring the Host Computer

When you start Kermit on a UNIX® host, the configuration file '.kermrc' is searched for and executed if found. Its purpose is similar to that of other configuration files such as '.mailrc' or '.newsrc'. The '.kermrc' file should be put in your home directory, and any Kermit commands can be put inside this file. Below is an example:

```
set line /dev/tty00
set speed 19200
set file type binary
set send packet 1024
set receive packet 1024
```

After Kermit has been started, list the current configuration and change values if necessary; however, if you want changes to be reflected when Kermit starts again, they must be added to the '.kermrc' file.

Following, is an overview of some Kermit functions - enough to get started. For more detail, consult your Kermit manual.

- To start Kermit, type:
  `kermit`
- To list available Kermit commands, type:
  ?
- To find out how to use these commands, type:
  `help <command>`
- To list the current Kermit configuration, at the prompt, type:
  `show`

  Once you are satisfied with the configuration parameters, follow the instructions in the next section 'Configuring the Tester' to load PTKermit and configure the tester to match the host.

  The first time you display the current configuration, the values in your '.kermrc' file will be reflected on the screen. If you have made any modifications in this session, an asterisk (*) will be displayed after the value.
- To modify any of the parameters, use the 'set' command.

Example:

The following sample session illustrates these configuration commands. In this example, the default configuration parameters were listed and the 'receive timeout' value was changed from 7 seconds to 10 seconds. The Kermit commands are highlighted in bold text.

```
>kermit
/dev/tty00: 9600 baud
Extended-length packets requested
Extended-length packets requested
C-Kermit, 4E(072) 24 Jan 89, HP 9000 Series HP-UX
Type ? for help

C-Kermit>? Command, one of the following:
 !              bye            cd             close
 connect        cwd            dial           directory
 echo           exit           finish         get
 hangup         help           log            quit
 receive        remote         script         send
 server         set            show           space
 statistics     take

C-Kermitshow

C-Kermit, 4E(072) 24 Jan 89, HP 9000 Series HP-UX,
Communications Parameters:
 Line: /dev/tty00, speed: 9600, mode: local,
modem-dialer: direct
 Bits: 8, parity: none, duplex: full, flow: xon/xoff,
handshake: none
Terminal emulation: 7 bits

Protocol Parameters:   Send  Receive     (* = override)
 Timeout:                10      7
 Padding:                 0      0      Block Check:     1
 Pad Character:           0      0      Delay:           5
 Packet Start:            1      1      Max Retries:    10
 Packet End:             13     13
 Packet Length:        1000*  1000 (94)
 Length Limit:         2048   1024
```

```
File parameters:
 File Names:    literal          Debugging Log:     none
 File Type:     binary           Packet Log:        none
 File Warning: off               Session Log:       none
 File Display: on                Transaction Log:   none

File Byte Size: 8, Incomplete File Disposition: discard,
Init file: .kermrc

C-Kermit>help set
The 'set' command is used to establish various
communication or file parameters.  The 'show' command can
be used to display the values of 'set' parameters.  Help
is available for each individual parameter; type
'help set ?' to see what's available.

C-Kermit>help set receive
Specify parameters for inbound packets:
End-Of-Packet (ASCII value), Packet-Length (1000 or
less), Padding (amount, 94 or less), Pad-Character (ASCII
value), Start-Of-Packet (ASCII value), and Timeout (94
seconds or less), all specified as decimal numbers.
C-Kermit>set receive timeout 10
C-Kermit>show

C-Kermit, 4E(072) 24 Jan 89, HP 9000 Series HP-UX,
Communications Parameters:
 Line: /dev/tty00, speed: 9600, mode: local,
modem-dialer: direct
 Bits: 8, parity: none, duplex: full, flow: xon/xoff,
handshake: none
Terminal emulation: 7 bits

Protocol Parameters:   Send  Receive    (* = override)
 Timeout:               10     10*
 Padding:                0      0    Block Check:    1
 Pad Character:          0      0    Delay:          5
 Packet Start:           1      1    Max Retries:   10
 Packet End:            13     13
 Packet Length:       1000*  1000 (94)
 Length Limit:        2048   1024
```

```
File parameters:
 File Names:   literal          Debugging Log:     none
 File Type:    binary           Packet Log:        none
 File Warning: off              Session Log:       none
 File Display: on               Transaction Log:   none

File Byte Size: 8, Incomplete File Disposition: discard,
Init file: .kermrc
```

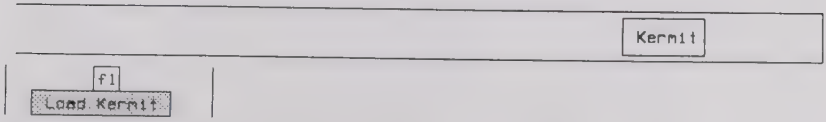
Configuring the Tester

Although PTKermit is compiled on the Home Menu software, the application must be loaded and the parameters changed to match those on the host computer. PTKermit can be unloaded after you are finished transferring files to conserve memory.

You can change the protocol and file parameters on the Kermit Configuration Menu using the available function keys or you can add PTKermit commands to your HOME.D configuration file to execute automatically at bootup. Refer to the Programmer's Reference Manual for a description of available commands and a sample HOME.D file.

To Load PTKermit

1. Move the topic box to the **Kermit** topic.
2. Press function key f1 - *Load Kermit.*

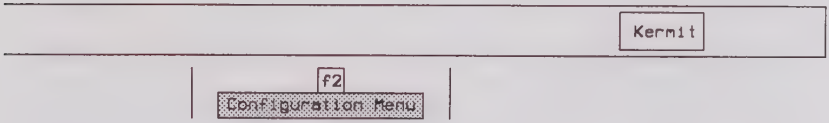


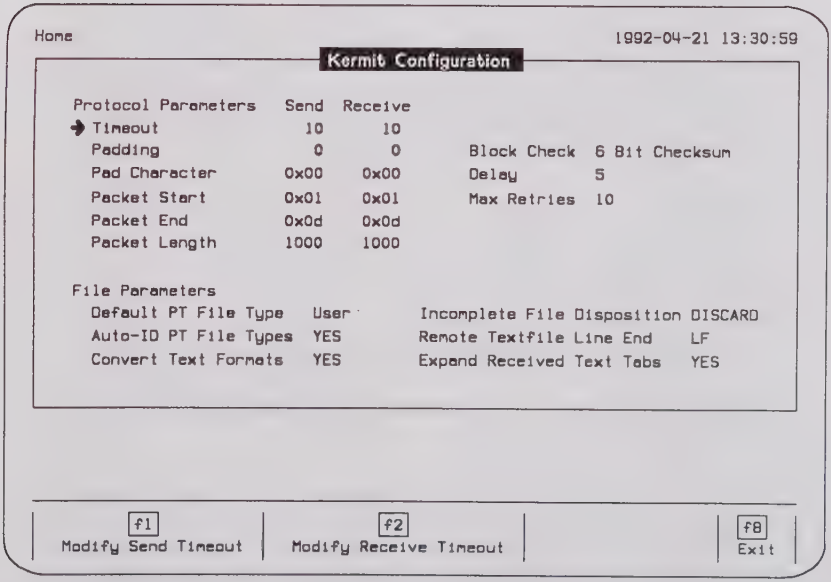
As soon as PTKermit is loaded, function key f1 - *Unload Kermit* and function key f2 - *Configuration Menu* are displayed.

NOTE
If FILEX is loaded, unload it before loading PTKermit.

To Set Protocol and File Parameters

1. Move the topic box to the **Kermit** topic.
2. Press function key f2 - *Configuration Menu* to display the Kermit Configuration menu.
3. Move the cursor to the desired parameters and press the corresponding function key to modify the status values for the protocol or file parameters.





Protocol Parameters

The protocol parameters on the Kermit Configuration menu are used to specify file transfer information from the point of view of the tester (send parameters--for packets sent to the host computer; receive parameters--expected by the tester for packets sent by the host computer).

→ *Timeout*
Specifies the number of seconds the host computer will wait to send/receive a packet before timing out. The default values are 1 through 94.

→ *Padding*
Specifies the number of pad characters before each sent/received packet. The default values are 0 through 94

C-Kermit documentation notes that "outbound padding is sometimes necessary for communicating with slow half duplex systems that provide no other means of line turnaround control. It can also be used to send special characters to communications equipment that needs to be put in 'transparent' or 'no-echo' mode, when this can be accomplished by feeding it a certain control character."

→ *Pad Character*
Specifies the pad character in sent/received packets.

→ *Packet Start*
Specifies the first character of sent/received packets.

→ *Packet End*
Specifies the last character of sent/received packets.

→ *Packet Length*
Specifies the length of sent/received packets. Packet lengths are negotiated between two connected Kermit applications every time a transaction is initiated. Valid values are from 10 through 1000. Packet lengths greater than 94 require an extension to the Kermit protocol, which not all Kermit applications support.

Send packet length in PTKermit overrides the packet length requested by the host during initialization, unless the host requests a shorter length. Receive packet length in PTKermit indicates the longest packet length PTKermit can receive.

→ *Block Check*
Selects the method of error checking used on sent/received packets. The possible selections for PTKermit map to other Kermit implementations as shown in the following table.

PTKermit	Other Kermit Implementations
6 Bit Checksum	*Block Check 1*
12 Bit Checksum	*Block Check 2*
16 Bit CCITT-CRC	*Block Check 3*

→ *Max Retries*
Specifies the maximum number of times PTKermit will resend a packet that has not been acknowledged by the other Kermit application.

File Parameters
The file parameters on the Kermit Configuration menu are used to identify some specific attributes of the file being transferred.

For files transferred to the PT302/PT502, you can select the type of PT file to create, or set PTKermit to automatically identify and create the appropriate type of PT file.

→ *Default PT File Type*
Selects the type of PT file to create when a file is received. The following file types can be selected: Data (*Data*), Object (*Obj*), Source (*Src*), Executable (*Exec*), User (*User*), Conformance (*Conf*), Internal Source File (*Psrc*),Test Manger Binary (*Tobj*), Active Object *(Aobj)*, DOS *(DOS)*, and Text *(Text)*. The file type on the host Kermit should be set to 'binary' (or 'image') mode to create a source, psrc, object, or executable file on the tester.

→ *Auto-ID PT File Types*
If enabled, incoming files will be automatically examined to determine the correct type of PT file to create. If disabled or if the file cannot be identified, the file will be created using the specified default PT file type.

→ *Convert Text Formats*
If enabled, transferred files will be converted between the tester's text file format and ASCII format. When a text file is transferred to the host,

- PT attribute bytes are stripped; the data bytes are assumed to be ASCII and no conversion is done;
- trailing blanks on each line are stripped; and
- a line terminator (CRLF or LF) is added to each line.

When a text file is transferred to the tester,

- line terminators (CRLF or LF) are removed;
- lines are padded to 80 characters with spaces; and
- attribute bytes specifying ASCII characters are inserted.

→ *Incomplete File Disposition*
Selects whether to discard or keep files that are received incomplete. This occurs if the transfer is aborted.

→ *Remote Textfile Line End*
Selects whether the end of line character is CRLF or LF. If the end of line character is set to match the host, all files can be transferred with the host Kermit in 'binary' mode. If the host uses neither character, PTKermit should be set to CRLF and the host Kermit must be set to 'text' mode to transfer text files and 'binary' mode to transfer non-text files.

→ *Expand Received Text Tabs*
Selects whether tabs are expanded when receiving ASCII text files with the Convert Text Formats option set to YES. Select YES if the file being transferred is a script file created under UNIX or MS-DOS® and which uses TAB characters for alignment of text. When set to YES, each incoming TAB character causes ASCII SPACE characters to be inserted into the received file sufficient to advance to the next tab stop. Tab stops occur every 8 characters, which is the default for both UNIX and MS-DOS®. Select NO if the text originates from another PT, or if it contains literal TAB characters that must be preserved (for example, within a search string). When set to NO, ASCII TAB characters are inserted into the received file like any other character. TAB characters can be seen directly in the PT Editor as a small "HT" symbol.

To Configure the Modem Port

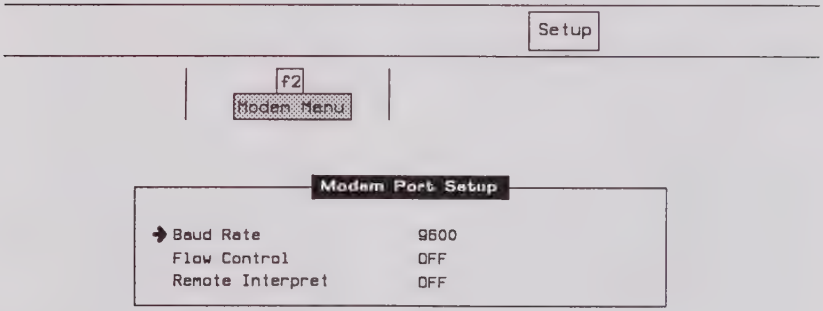
When initially loaded, PTKermit sets the following modem port configuration parameters:

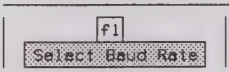
- block mode
- 1 stop bit
- no parity
- DTR ON

Set the baud rate on the tester to match the line speed on the host computer. You do not need to set the default flow control and remote interpret parameters, since these are set automatically by PTKermit.

1. Move the topic box to the **Setup** topic.
2. Press function key f2 - *Modem Menu* to display the Modem Port Setup menu.
3. Move the cursor to *Baud Rate* and press function key f1 - *Select Baud Rate* to display the Port Speed menu.
4. Move the cursor to the desired speed and press:
   - function key f1 - *Set Modem Port Speed* to select one of the displayed speeds.
     or
   - function key f2 - *Modify Speed* to specify a speed which is not displayed on the menu. Enter the desired speed and press RETURN.

   In both cases, the current speed will be displayed at the bottom of the menu.
5. Press *Exit* to return to the Modem Port Setup menu.





Using Remote Commands

If you have correctly connected the tester and have configured the parameters to match the host, you can control the tester remotely from the host computer. You can also use these commands to check the integrity of the connection. Valid drive names on the tester are: DR0:, DR1 (PT502 only):, WD0: through WD7:. If you omit the drive name, the current working directory will be used.

NOTE
Not all implementations of Kermit allow the use of 'remote' commands.

- To list commands that can be used with the '`remote`' command, type:
  `REMOTE HELP`

- To change the current working directory, type:
  `REMOTE CWD <drive>`

  Example:
  Change the working directory to WD3.

  `REMOTE CWD WD3:`

- To list a directory, type:
  `REMOTE DIR <drive>`

  Example:
  List the contents of WD3.

  `REMOTE DIR WD3:`
  or
  `REMOTE DIR`

- To return the amount of free space on a selected drive, type:
  `REMOTE SPACE <drive>`

  Example:
  Check the amount of free space available on WD3.

  ```
  REMOTE SPACE WD3:
   or
  REMOTE SPACE
  ```

- To list a text file on your screen, type:
  `REMOTE TYPE <drive:filename>`

- To delete a file, type:
  `REMOTE DELETE <drive:filename>`

- To execute an ITL command, type:
  `REMOTE HOST < ITL command >`

  The 'ITL command' field can contain up to 80 characters. All remote ITL commands are executed on the HOME processor. Refer to the Programmer's Reference Manual for descriptions of available commands.

  Example:
  Change the current topic on the tester to **Kermit**.

  ```
  REMOTE HOST " Kermit" SET_CURR_TOPIC
  ```

Transferring Files

Once PTKermit is loaded and configured to match the host, files can be transferred to and from the tester on the host computer. Depending on the Kermit implementation you are using, wildcards can also be specified to transfer multiple files. Only files in the same directory can be transferred.

To Send Files to the Tester

Use the 'send' command, followed by the source filename and the destination filename (optional), to transfer a file (or files) to the tester.

```
send <source filename> <destination drive:filename>
```

The drive name can optionally be included in the destination filename. Valid filename length is 14 characters. If the destination filename is omitted, a file (or files) will be created using the source filename. If the destination filename is not specified, the source filename can not contain a directory path (i.e., sending '`/etc/bin/filename`', would cause Kermit to try and create a file named /etc/bin/filename on the tester and it would fail; instead, use `/etc/bin/filename filename`).

Example 1:
Send a file named 'MYFILE' to the tester on hard disk partition WD3 with the filename 'FILE1'.

```
send MYFILE WD3:FILE1
```

Example 2:
Send all files with the suffix '.F' to the current working directory on the tester.

```
send *.F
```

To Receive Files from the Tester

Use the 'get' command to transfer a file (or files) from the tester. The 'get' command can be used two different ways:

- Type: `get` and press RETURN. You will be prompted for the remote file specification and the local name to store it under.
  or
- Type:

```
get <source drive:filename> <destination filename>
```

The drive name can also be included in the source filename. Valid filename length is 14 characters. If the destination filename is omitted, a file with the same name will be created in the current local directory.

Example 1:
Transfer the file named 'FILE1' on hard disk partition WD3 and rename it 'MYFILE1' in the current local directory.

```
get
```
Remote file specification: `WD3:FILE1`
Local name to store it under: `MYFILE1`

or

```
get WD3:FILE1 MYFILE1
```

Example 2:
Transfer all files with the suffix '.F' from the current working directory on the tester.

```
get *.F
```

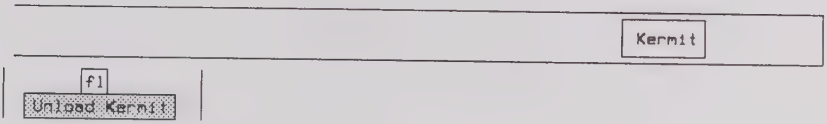
Ending Your Kermit Session

To exit Kermit on the host computer, type:

```
quit
```

To Unload Kermit from the Tester:

1. Move the topic box to the **Kermit** topic.
2. Press function key f1 - *Unload Kermit.*



Problems?

If Files Cannot be Transferred

- Check the integrity of the connection by remotely listing the contents of the current working directory. If this fails, check the following three items.
- Check that the host computer is connected to the modem port on the tester via a null modem cable.
- Check that the configuration parameters on the Kermit Configuration menu match those on the host Kermit. Specifically, ensure that the send and receive packet length is the same.
- Check that the baud rate on the Modem Port Setup menu matches that on the host computer.

Appendix A

Connector Pinouts

WAN Connectors

The WAN connectors can be configured as a DTE, DCE, or high impedance monitor using the application software. Only one of the WAN connectors is *active* at a time. All other connectors are switched off in a high impedance mode. Networks connected to an inactive connector are completely isolated from the tester.

V.35

This connector can be optionally replaced with a V.36/RS-449 connector.

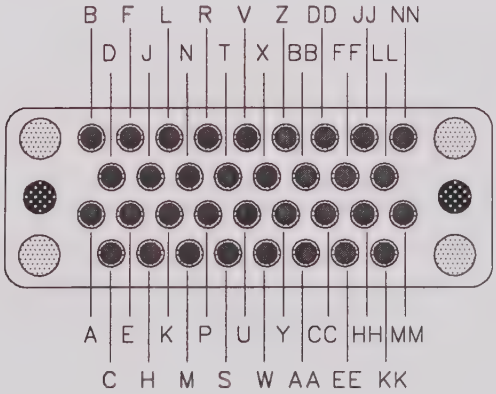


Figure A-1 V.35 Female Connector

NOTE
For balanced circuits, the associated pairs are designated after the circuit number as A and B.

NOTE
All balanced circuits are implemented using V.11 receivers and transmitters instead of V.35 Appendix II.

Pin #	CCITT Circuit (number, description, mnemonic)			Direction DTE DCE
A		Protective ground	PG	--
B	102	Signal ground	SG	--
C	105	Request to send	RTS	->
D	106	Ready for sending	CTS	<-
E	107	Data set ready	*	<-
F	109	Data channel received line signal detector	*	<-
H	108	Data terminal ready	**	->
J	125	Calling indicator		<-
K		Reserved		
L	141	Local loopback		->
M		Reserved		
N	140	Loopback/Maintenance test		->
P	103 A	Transmitted data	TD	->
R	104 A	Received data	RD	<-
S	103 B	Transmitted data	TD	->
T	104 B	Received data	RD	<-
U	113 A	Transmitter signal element timing	XTC	->
V	115 A	Receiver signal element timing	RC	<-
W	113 B	Transmitter signal element timing	XTC	->
X	115 B	Receiver signal element timing	RC	<-
Y	114 A	Transmitter signal element timing	TC	<-
Z		Reserved		
AA	114 B	Transmitter signal element timing	TC	<-
BB		Reserved		
CC		Reserved		
DD		Reserved		
EE		Reserved		
FF		Reserved		
HH		Reserved		
JJ		Reserved		
KK		Reserved		
LL		Reserved		
MM		Reserved		
NN	142	Test indicator		<-

The V.35 connector conforms to ISO 2592. Only supported circuits are shown with a mnemonic.

* These circuits are not received in any mode, and are transmitted as ON in 'TO DTE' emulation mode.

** This circuit is not received in any mode, and is transmitted as ON in 'TO DCE' emulation mode.

Table A-1 V.35 Pin Designations

V.36/RS-449

This connector can be optionally replaced with a V.35 connector.

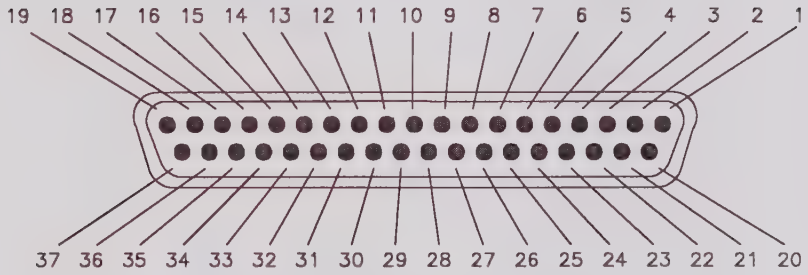


Figure A-2 V.36/RS-449 Female Connector

NOTE
For balanced circuits, the associated pairs are designated after the circuit number as A and B.

Pin #	CCITT Circuit (number, description, mnemonic)			Direction DTE DCE
1		Protective Ground	PG	
2	112	Data signalling rate selector		<-
3		Reserved		
4	103 A	Transmitted data	TD	->
5	114 A	Transmitter signal element timing	TC	<-
6	104 A	Received data	RD	<-
7	105 A	Request to send	RTS	->
8	115 A	Receiver signal element timing	RC	<-
9	106 A	Ready for sending	CTS	<-
10	141	Local loopback		->
11	107 A	Data set ready	*	<-
12	108 A	Data terminal ready	**	->
13	109 A	Data channel received line signal detector	*	<-
14	140	Loopback/Maintenance test		->
15	125	Calling indicator		<-
16	111	Data signalling rate selector		->
17	113 A	Transmitter signal element timing	XTC	->
18	142	Test indicator		<-
19	102	Signal ground	SG	--
20	102b	DCE common return		->
21		Reserved		
22	103 B	Transmitted data	TD	->
23	114 B	Transmitter signal element timing	TC	<-
24	104 B	Received data	RD	<-
25	105 B	Request to send	RTS	->
26	115 B	Receiver signal element timing	RC	<-
27	106 B	Ready for sending	CTS	<-
28	135	Terminal in service		->
29	107 B	Data set ready	*	<-
30	108 B	Data terminal ready	**	->
31	109 B	Data channel received line signal detector	*	<-
32	116	Back-up switching		->
33	110	Data signal quality detector		<-
34	136	New signal		->
35	113 B	Transmitter signal element timing	XTC	->
36	117	Standby indicator		<-
37	102a	DTE common return		<-

The V.36 connector conforms to ISO 4902. Only supported circuits are shown with mnemonics.

* These leads are not received in any mode, and are transmitted as ON in 'TO DTE' emulation mode.

** This lead is not received in any mode, and is transmitted as ON in 'TO DCE' emulation mode.

Table A-2 V.36/RS-449 Pin Designations

V.11/X.21

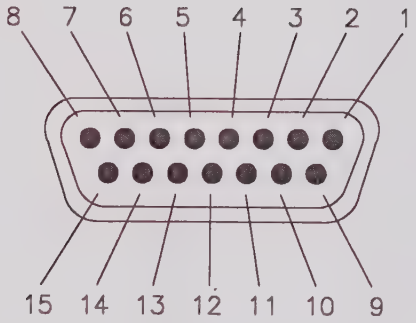


Figure A-3 V.11/X.21 Female Connector

NOTE
For balanced circuits, the associated pairs are designated after the circuit number as A and B

Pin #	CCITT Circuit (number, description, mnemonic)			Direction DTE DCE
1		Protective ground	PG	--
2	103 A	Transmitted data	T	->
3	105 A	Control	C	->
4	104 A	Received data	R	<-
5	106 A	Indicate	I	<-
6	114 A	Signal element timing	S	<-
7	A	Byte timing		<-
8	102	Signal ground	SG	--
9	103 B	Transmitted data	T	->
10	105 B	Control	C	->
11	104 B	Received data	R	<-
12	106 B	Indicate	I	<-
13	114 B	Signal element timing	S	<-
14	B	Byte timing		<-
15		Reserved		

The X.21 connector conforms to ISO 4903. Only supported circuits are shown with a mnemonic.

Table A-3 V.11/X.21 Pin Designations

T1-E1 Connectors

T1-E1 can be configured for monitor or emulation. The PT302/PT502 uses an automatic gain control on the T1-E1 receivers. In monitor mode, the PT302/PT502 receives signals with as much as 35 dB loss, in a noise-free environment.

RJ-48C (T1)

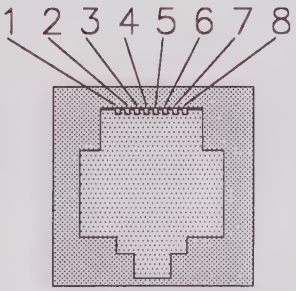


Figure A-4 RJ-48C Female Connector

Emulation Mode

Pin #	T1(Jpn) Pin #	Mnemonic	Description
1	4	RX+	Receive Positive
2	5	RX-	Receive Negative
4	3	TX+	Transmit Positive
5	6	TX-	Transmit Negative

Table A-4 RJ-48C Pin Designations - User

Pin #	T1(Jpn) Pin #	Mnemonic	Description
1	4	TX+	Transmit Positive
2	5	TX-	Transmit Negative
4	3	RX+	Receive Positive
5	6	RX-	Receive Negative

Table A-5 RJ-48C Pin Designations - Network

Monitor Mode

Pin #	T1(Jpn) Pin #	Mnemonic
1	4	NT->TE+
2	5	NT->TE-
4	3	TE->NT+
5	6	TE->NT-

Table A-6 RJ-48C Pin Designations

NOTE
Directions can be reversed (see Connector Config. on the Interface Configuration menu). T1(Jpn) is an option for Japanese units.

Bantam (T1)

Each Bantam connector handles one direction of data.

Emulation Mode

TIP	=	TX- or RX-
RING	=	TX+ or RX+
SLEEVE	=	Ground

Monitor Mode

TIP	=	RX-
RING	=	RX+
SLEEVE	=	Ground

DB-9 (E1)

Two DB-9 pin female connectors work for both the 75 ohm and 120 ohm balanced interface.

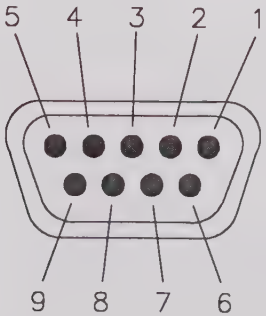


Figure A-5 DB-9 (CEPT) Female Connector

Emulation Mode

Pin #	Mnemonic	Description
1	RX-	Receive Negative
5	TX-	Transmit Negative
6	RX+	Receive Positive
9	TX+	Transmit Positive
2, 3, 4	GND	Ground

Table A-7 DB-9 Pin Designations - User

Pin #	Mnemonic	Description
1	TX-	Transmit Negative
5	RX-	Receive Negative
6	TX+	Transmit Positive
9	RX+	Receive Positive
2, 3, 4	GND	Ground

Table A-8 DB-9 Pin Designations - Network

Monitor Mode

Pin #	Mnemonic
1	NT->TE-
5	TE->NT-
6	NT->TE+
9	TE->NT+
2, 3, 4	GND

Table A-9 DB-9 Pin Designations

NOTE
Directions can be reversed (see Connector Config. on the Interface Configuration menu).

External Clock In and Out BNC Connectors

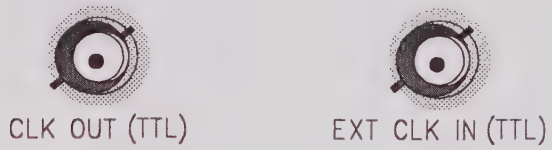


Figure A-6 External Clock In and Out BNC Connectors

External Clock In

When a clock is connected to this input, it replaces the transmit clocks (in cases where the transmit clock uses the local oscillator, i.e. 'NETWORK'). Valid clocks are 1.544 MHz or 2.048 MHz ± 50 ppm, TTL with a 50% ± 2% duty cycle. Input impedance is approximately 300 ohms.

External Clock Out

When no clock is connected to External Clock In, then this clock is equal to the local oscillator frequency (1.544 MHz or 2.048 MHz) generated by the tester. If there is a clock connected to External Clock In then (CLK.OUT) = F(EXT.CLK.IN). This is a TTL output, 50% duty cycle clock with a source impedance of approximately 100 ohms.

Miscellaneous Connectors

The miscellaneous connectors include the serial and parallel printer ports, the modem port, and the external color CRT, the auxiliary keyboard connector, and the remote reset terminals.

Serial Printer Port

The serial printer port is a female RS-232C DCE interface and can be configured to 19.2 kbps.

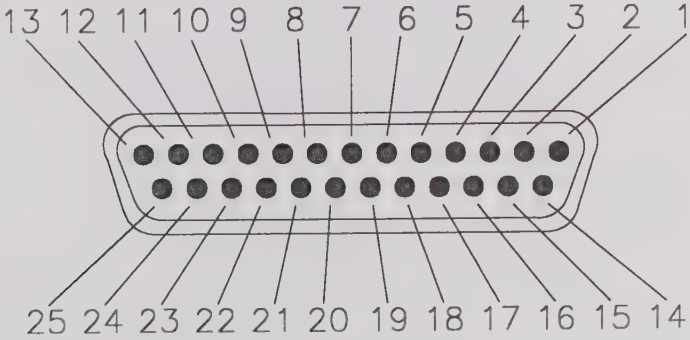


Figure A-7 Serial Printer Port Female Connector

Pin #	Direction	Description
1		Protective Ground
2	From Printer	Receive Data
3	To Printer	Send Data
5		+ 12 volt pull up
6		+ 12 volt pull up
7		Signal Ground
8		+ 12 volt pull up
20	From Printer	Data Terminal Ready

Table A-10 Serial Printer Port Pin Designations

Parallel Printer Port

The parallel printer port is a DB-25 connector. All signals are TTL level.

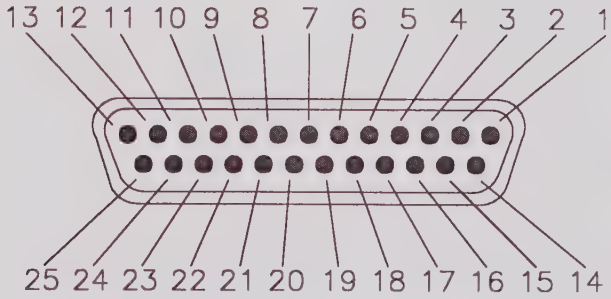


Figure A-8 DB-25 Printer Port Female Connector

Pin #	Direction	Description
1	To Printer	Active Low (DATA STROBE)
2-9	To Printer	Send Data (DATA0-DATA7)
11	From Printer	Printer Busy (BUSY)
12	From Printer	Out of Paper (PAPER END)
13	From Printer	Printer On-Line (SELECT)
14, 18-25		Signal Ground

Table A-11 DB-25 Printer Port Pin Designations

Modem Port

The modem (remote) port is an RS-232C DTE interface and can be configured to speeds of up to 19.2 kbps.

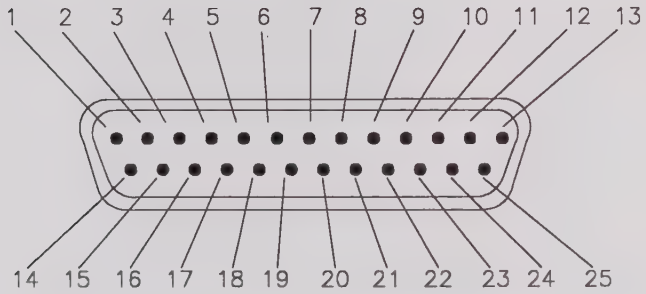


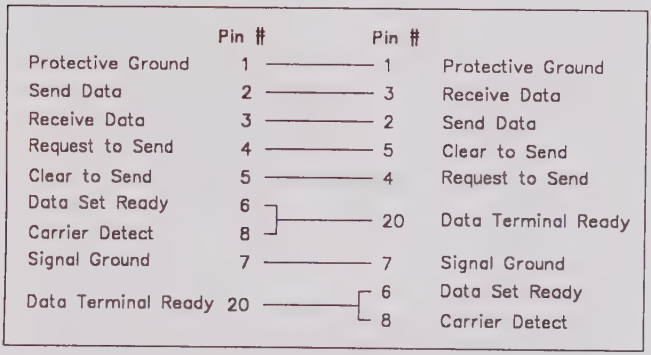
Figure A-9 Modem Port Male Connector

Pin #	Direction	Description
1		Protective Ground
2	To Remote	Send Data
3	To PT	Receive Data
4	To Remote	Request to Send
5	To PT	Clear to Send
6	To PT	Data Set Ready
7		Signal Ground
20	To Remote	Data Terminal Ready

Table A-12 Modem Port Pin Designations

Null Modem

The following table lists pinouts for the cable connections required to connect via a null modem.



External Color CRT

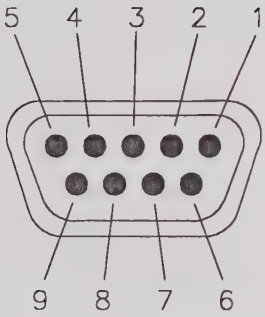


Figure A-10 DB-9 External Color CRT Connector

Pin #	Description
1	Ground
2	Ground
3	Red
4	Green
5	Blue
6	Intensity (pull up resistor)
8	Horizontal Sync
9	Vertical Sync

Table A-13 External Color CRT Pin Designations

Auxiliary Keyboard Connector

This connector is for PT/RTA keyboards only, but is normally used only in an RTA configuration. It allows you to connect a keyboard directly to the RTA unit. For the PTs, it is a parallel extension of the keyboard connector on the front panel; however, only one keyboard can be connected to the tester at one time.

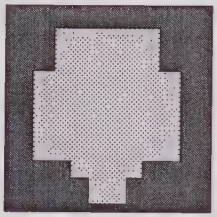


Figure A-11 Auxiliary Interface Keyboard Connector

Remote Reset Terminals

The remote reset terminals accept a pair of 18-24 AWG wires routed to open switch or relay contacts. These connections allow you to remotely initiate a logic level reset that causes a hardware reset and reboot. To reboot the tester, close the circuit for at least one second.

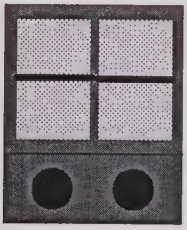


Figure A-12 Auxiliary Interface Remote Reset Terminals

Appendix B

Conversion Table

HEX	DEC	OCT	ASCII	EBCDIC	HEX	DEC	OCT	ASCII	EBCDIC
00	0	00	NUL	NUL	30	48	60	0	
01	1	01	SOH	SOH	31	49	61	1	
02	2	02	STX	STX	32	50	62	2	SYN
03	3	03	ETX	ETX	33	51	63	3	
04	4	04	EOT	PF	34	52	64	4	PN
05	5	05	ENQ	HT	35	53	65	5	RS
06	6	06	ACK	LC	36	54	66	6	UC
07	7	07	BEL	DEL	37	55	67	7	EOT
08	8	10	BS		38	56	70	8	
09	9	11	HT		39	57	71	9	
0A	10	12	LF	SMM	3A	58	72	:	
0B	11	13	VT	VT	3B	59	73	;	CU3
0C	12	14	FF	FF	3C	60	74	<	DC4
0D	13	15	CR	CR	3D	61	75	=	NAK
0E	14	16	SO	SO	3E	62	76	>	
0F	15	17	SI	SI	3F	63	77	?	SUB
10	16	20	DLE	DLE	40	64	100	@	SP
11	17	21	DC1	DC1	41	65	101	A	
12	18	22	DC2	DC2	42	66	102	B	
13	19	23	DC3	DC3	43	67	103	C	
14	20	24	DC4	RES	44	68	104	D	
15	21	25	NAK	NL	45	69	105	E	
16	22	26	SYN	BS	46	70	106	F	
17	23	27	ETB	IL	47	71	107	G	
18	24	30	CAN	CAN	48	72	110	H	
19	25	31	EM	EM	49	73	111	I	
1A	26	32	SUB	CC	4A	74	112	J	cent
1B	27	33	ESC	CUI	4B	75	113	K	.
1C	28	34	FS	IFS	4C	76	114	L	<
1D	29	35	GS	IGS	4D	77	115	M	(
1E	30	36	RS	IRS	4E	78	116	N	+
1F	31	37	US	IUS	4F	79	117	O	
20	32	40	SP	DS	50	80	120	P	&
21	33	41	!	SOS	51	81	121	Q	
22	34	42	"	FS	52	82	122	R	
23	35	43	#		53	83	123	S	
24	36	44	$	BYP	54	84	124	T	
25	37	45	%	LF	55	85	125	U	
26	38	46	&	ETB	56	86	126	V	
27	39	47	'	ESC	57	87	127	W	
28	40	50	(		58	88	130	X	
29	41	51	)		59	89	131	Y	
2A	42	52	*	SM/SW	5A	90	132	Z	!
2B	43	53	+	C2	5B	91	133	[	$
2C	44	54	,		5C	92	134	\	*
2D	45	55	-	ENQ	5D	93	135	]	)
2E	46	56	.	ACK	5E	94	136	^	;
2F	47	57	/	BEL	5F	95	137	_	¬

HEX	DEC	OCT	ASCII	EBCDIC
60	96	140	`	-
61	97	141	a	/
62	98	142	b	
63	99	143	c	
64	100	144	d	
65	101	145	e	
66	102	146	f	
67	103	147	g	
68	104	150	h	
69	105	151	i	
6A	106	152	j	|
6B	107	153	k	,
6C	108	154	l	%
6D	109	155	m	_
6E	110	156	n	>
6F	111	157	o	?
70	112	160	p	
71	113	161	q	
72	114	162	r	
73	115	163	s	
74	116	164	t	
75	117	165	u	
76	118	166	v	
77	119	167	w	
78	120	170	x	
79	121	171	y	'
7A	122	172	z	:
7B	123	173	{	#
7C	124	174	|	@
7D	125	175	}	'
7E	126	176	~	=
7F	127	177	DEL	"
80	128	200		
81	129	201		a
82	130	202		b
83	131	203		c
84	132	204		d
85	133	205		e
86	134	206		f
87	135	207		g
88	136	210		h
89	137	211		i
8A	138	212		
8B	139	213		
8C	140	214		
8D	141	215		
8E	142	216		
8F	143	217		

HEX	DEC	OCT	ASCII	EBCDIC
90	144	220		
91	145	221		j
92	146	222		k
93	147	223		l
94	148	224		m
95	149	225		n
96	150	226		o
97	151	227		p
98	152	230		q
99	153	231		r
9A	154	232		
9B	155	233		
9C	156	234		
9D	157	235		
9E	158	236		
9F	159	237		
A0	160	240		
A1	161	241		~
A2	162	242		s
A3	163	243		t
A4	164	244		u
A5	165	245		v
A6	166	246		w
A7	167	247		x
A8	168	250		y
A9	169	251		z
AA	170	252		
AB	171	253		
AC	172	254		
AD	173	255		[
AE	174	256		
AF	175	257		
B0	176	260		
B1	177	261		
B2	178	262		
B3	179	263		
B4	180	264		
B5	181	265		
B6	182	266		
B7	183	267		
B8	184	270		
B9	185	271		
BA	186	272		
BB	187	273		
BC	188	274		
BD	189	275		]
BE	190	276		
BF	191	277		

HEX	DEC	OCT	ASCII	EBCDIC
C0	192	300		{
C1	193	301		A
C2	194	302		B
C3	195	303		C
C4	196	304		D
C5	197	305		E
C6	198	306		F
C7	199	307		G
C8	200	310		H
C9	201	311		I
CA	202	312		
CB	203	313		
CC	204	314		
CD	205	315		
CE	206	316		
CF	207	317		
D0	208	320		}
D1	209	321		J
D2	210	322		K
D3	211	323		L
D4	212	324		M
D5	213	325		N
D6	214	326		O
D7	215	327		P
D8	216	330		Q
D9	217	331		R
DA	218	332		
DB	219	333		
DC	220	334		
DD	221	335		
DE	222	336		
DF	223	337		
E0	224	340		\
E1	225	341		
E2	226	342		S
E3	227	343		T
E4	228	344		U
E5	229	345		V
E6	230	346		W
E7	231	347		X
E8	232	350		Y
E9	233	351		Z
EA	234	352		
EB	235	353		
EC	236	354		
ED	237	355		
EE	238	356		
EF	239	357		

HEX	DEC	OCT	ASCII	EBCDIC
F0	240	360		0
F1	241	361		1
F2	242	362		2
F3	243	363		3
F4	244	364		4
F5	245	365		5
F6	246	366		6
F7	247	367		7
F8	248	370		8
F9	249	371		9
FA	250	372		
FB	251	373		
FC	252	374		
FD	253	375		
FE	254	376		
FF	255	377		

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Common Control

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Installing Software

A utility is available to automate the software installation process. Install files, which contain hardware-specific information necessary for the installation process, are located on the *Common Control* disk. Only files relevant to your hardware configuration will be installed.

The minimum contiguous free space required to install the software is listed below:
Common Control - 140 Kbytes

Before you begin...

- Power up or reboot the tester. Once the operating system loads and the IDACOM logo is displayed, the Home Menu will load.

NOTE
If you are updating your software and have customized any files, back them up before installing this version of software.

To Install Common Control on the Hard Disk

1. Insert the disk labelled *Common Control* in floppy drive DR0.
2. On the HOME processor, move the topic box to the **Install** topic.
3. Press function key f1 - *Install Software.*
4. Follow the instructions on the screen.

Problem Fixed (Common Control Version 3.0 Rev 2)

Loading X.25, Frame Relay, and ISDN
X.25, Frame Relay, and ISDN version 4.0 now load correctly. (This problem only occurred with Common Control version 3.0 Rev. 1.)

Problem Fixed (Common Control Version 3.0 Rev 1)

Loading ISDN Executable Test Suites
Common Control now properly loads all ISDN Executable Test Suites.

Enhancements (Common Control Version 3.0 Rev 0)

- **Single Relocatable Binary File**
  With this release of Common Control, a single relocatable binary file replaces all the previous non-relocatable binary files. This uses far less disk space and makes Common Control available to more applications. It will also remain compatible with future releases of applications and operating systems.

- **?LOAD_OBJECT**
  A new command, ?LOAD_OBJECT, has been provided for test suite developers. The file search algorithm has been changed to look for object files first, then source files.

- **New Remote Terminal Commands**

pass#	fail#	inconc#
ITERATIONS	DELAY-BETWEEN-CASES	TEST-ID-FRAMES
FOR-RECORDING	VERDICT-RECORD	VERDICT-INTERRUPT
PRINT-OFF	PRINT-SHORT	PRINT-DETAILED

Problems Fixed (Common Control Version 3.0 Rev 0)

Aborting While Printing
Aborting while printing now works.

Reloading Test Suite Software
Test cards are now cleared when reloading Test Suite software.

Documentation

The following documentation corresponds to the first release of this product. Insert this Product Release Notice in front of the Common Control User Manual and immediately after the divider tab to keep a record of this release.

- **Common Control User Manual** - Version 3.0

Common Control

□ **Common Control** Version 3.0 Rev 2

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